

77/185

ORF d'après Cole et al. (Nature 393:537-544) et contenant Rv3576

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1/1 31/11
taa gct tgt cgc aca tgg tgc cgg cag gga gga aca gtg ggc aag cag cta gcc ggc ctc
OCH ala cys arg thr trp cys arg gln gly gly thr val gly lys gln leu ala ala leu
61/21 91/31
gcc gcg ctg gtc ggt cgc tgc atg ctc gca gcc gga tgc acc aac gtg gtc gcc ggg acc
ala ala leu val gly ala cys met leu ala ala gly cys thr asn val val asp gly thr
121/41 151/51
gcc gcg gct gcc gcc aaa tcc gga cca ctg cat cag gat cgg ata cgg gcc tcc gcc ctt
ala val ala ala asp lys ser gly pro leu his gln asp pro ile pro val ser ala leu
181/61 211/71
gaa ggg ctg ctt ctc gac ttg agc cag atc aat gcc gcg ctg ggt gcg aca tgg atg aag
glu gly leu leu leu asp leu ser gln ile asn ala ala leu gly ala thr ser met lys
241/81 271/91
gtg tgg ttc aac gcc aag gaa atg tgg gac tgg agc aag agc gtg gcc gcc aag aat tgc
val trp phe asn ala lys ala met trp asp trp ser lys ser val ala asp lys asn cys
301/101 331/111
ctg gct atc gac ggt cca gca tag gaa aag gtc tat gcc gcc acc ggg tgg acc gcc arg
lea ala ile asp gly pro ala gln glu lys val tyr ala gly thr gly trp thr ala met
361/121 391/131
cgc gcc caa cgg ctg gat gac agc atc gat gcc tcc aag aaa cgc gcc cac tac gcc atc
arg gly gln arg leu asp asp ser ile asp asp ser lys lys arg asp his tyr ala ile
421/141 451/151
caa gcg gtc gtc ggt tcc cgg acc gca tat gat gcc gag gag ttc tac agc tcc tgg gtc
gln ala val val gly phe pro thr ala his asp ala glu glu phe tyr ser ser ser val
481/161 511/171
caa agc tgg agc agc tgc tgc aac cgc cgg ttt gtc gaa gtc acc ccc gga cag gac gcc
gln ser trp ser ser cys ser asn arg arg phe val glu val thr pro gly gln asp asp
541/181 571/191
gcc gcc tgg aat gtg gct gcc gtt gtc aac gcc aac gcc atg ctc agt agc tgg aag gtt
ala ala trp thr val ala asp val val asn asp asn gly ser leu ser ser ser gln val
601/201 631/211
cag gaa ggc gcc gcc gga tgg acc tgc cag cgt gcc ctg act gcc cgc aac aac gct act
gla glu gly gly asp gly trp thr cys gln arg ala leu thr ala arg asn asn val thr
661/221 691/231
atc gac att gtc acg tgc gcc tat agc caa cgg gat ttg gtc gcg att gcc atc gct aac
ile asp ile val thr cys ala tyr ser gln pro asp leu val ala ile gly ile ala asn
721/241
caa atc gcc gcc aag gtt gct aag cag tag
gln ile ala ala lys val ala lys gln AMB

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SEQ ID N° 20F

FIGURE 20F

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1/1 31/11
 GTC CTG GTC GCC GCG CAA CTG GCC GGT CCG GAT GGA AAG TGT TCA CGA TCG CGC TTC TGC
 val leu val ala ala gln leu ala gly pro asp gly lys cys ser arg ser arg phe cys
 61/21 91/31
 CCG TGG TAG TGG CGA TGG TGT TAG CAG GAT TGC GGG TCG AGG CTG CGA TGG CCA GCA CCA
 arg trp AMB trp arg trp cys AMB gln asp cys gly ser arg leu arg trp pro ala pro
 121/41 151/51
 GCG GCC TGC GGC TGG TCG CCG CGC GCG CCG AAA TGA TAC CCG CGA TCA CCA AAT ACA TGT
 ala ala cys gly trp ser pro arg ala pro lys CAA tyt pro arg ser arg asn thr cys
 181/61 211/71
 CCG CGC TGG ACG TCG CCG TGC TGG CCA GGT CGA CCG GAC ACG ATG TGG ACG GGG CGC AGA
 arg arg trp thr ser pro cys trp pro ala arg pro asp thr met trp arg gly arg arg
 241/81 271/91
 AAA ACT TCA CCG CCC GCA AGT ACG AGC TGC AGA CGC GAC TGG CCG ACA CCG ACC TGA TCG
 lys thr ser pro pro ala ser thr ser cys arg arg asp trp pro thr pro thr ser ser
 301/101 331/111
 CAG ACG TGC GGT CCG GAG TGA ACA CCG TGC TGA ACG CCG GTC ACG CCG TGC TGG ATA AGA
 gln thr cys gly arg glu CAA thr arg cys ser thr ala val arg arg cys trp ile arg
 361/121
 TGC TGG CCG ACA GCA TGC GCT TGC GGG ATC
 cys trp pro thr ala ser ala cys gly ile

SEQ ID N° 21A

FIGURE 21A

32/11
 TGC TGG TCG CCG CGC AAC TGG CCG GTC CCG ATG GAA AGT GTT CAC GAT CCG GCT TGT GCC
 ser trp ser ser pro arg asn trp pro val pro met glu ser val his asp arg ala ser ala
 62/21 92/31
 GCT GGT AGT GGC GAT GGT GTT AGC AGC ATT GCG GGT CCA GCG TGC GAT GGC CAG CAC CAG
 ala gly ser gly asp gly val ser arg ile ala gly arg gly cys asp gly gln his gln
 122/41 152/51
 CCG CCT GCG GCT GGT CCG CCG GCG CCG CCA AAT GAT ACC CCG GAT CAC GAA ATA CAT CTC
 arg pro ala ala gly arg arg ala arg arg asn asp thr arg asp his glu ile his val
 182/61 212/71
 GCG GCT GGA GGT CCG GGT GCT CCG CAG CTC GAC CCG ACA CGA TGT GGA GGG GCG GCA GAA
 gly ala gly arg arg arg ala gly gln leu asp arg thr arg cys gly gly gly ala glu
 242/81 272/91
 AAA CTT CAC CCG CCG CAA GTA CGA GCT GCA GAC GCG ACT GGC CGA CAC CGA GGT CAT CCG
 lys leu his arg pro gln val arg ala ala asp ala thr gly arg his arg arg his arg
 302/101 332/111
 AGA GGT GCG GTT GGG AGT GAA CAC GCT GGT CAA CCG CCG TCA CCG GCT GCT GGA TAA GAT
 arg arg ala val gly ser glu his ala ala gln arg arg ser gly ala ala gly CCG asp
 362/121
 GCT GGC CGA CAG CAT CCG CTT CCG GGA TC
 ala gly arg gln his arg leu ala gly

SEQ ID N° 21B

FIGURE 21B

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33/11
 CCT GGT CGC CGC GCA ACT GGC CGG TCC CGA TGG AAA GTG TTC ACG ATC GCG CTT CTG CCG
 pro gly arg arg ala thr gly arg ser arg trp lys val phe thr ile ala leu leu pro
 63/21 93/31
 CTG GTA CTG GCG ATG GTG TTA GCA GGA TTS CGG GTC GAG GGT GCG ATG GCC AGC ACC AGC
 leu val val ala met val leu ala gly leu arg val glu ala ala met ala ser thr ser
 123/41 153/51
 GGC CTG GCG CTG GTC GGC GCG CGC GCC GAA ATG ATA CCC GCG ATC ACG AAA TAC ATG TCG
 gly leu arg leu val ala ala arg ala glu met ile pro ala ile thr lys tyr met ser
 183/61 213/71
 GCG CTG GAC GTG GGC GTG CTG GGC AGC TCG ACC GGA CAC GAT GTG GAG GGG GCG CAG AAA
 ala leu asp val ala val leu ala ser ser thr gly his asp val glu gly ala glu lys
 243/81 273/91
 AAC TTC ACC GGC CGC AAG TAC GAG CTG CAG ACC CGA CTG GCG GAC ACC GAC GTC ATC CGA
 asn phe thr ala arg lys tyr glu leu glu thr arg leu ala asp thr asp val ile ala
 303/101 333/111
 GAC CTG GCG TCG GGA GTG AAC ACG CTG CTC AAC GCG GGT GAG GCG CTG CTG GAT AAG ATG
 asp val arg ser gly val asn thr leu leu asn gly gly glu ala leu leu asp lys met
 363/121
 CTG GCG GAC AGC ATC GGC TTG CCG GAT C
 leu ala asp ser ile gly leu arg asp

SEQ ID N° 21C

FIGURE 21C

partie de la séquence nucléotidique de seq21A

1/1 31/11
 ACC ATC GCG CTT CTG CCG CTG GTA GTG GCG ATG GCG TTA GCA GGA TTG GCG GTC GAG GCT
 thr ile ala leu leu pro leu val val ala met val leu ala gly leu arg val glu ala
 61/21 91/31
 GCG ATG GCC AGC ACC AGC GGC CTG CCG CTG GTC GCG GCG GCG GCG GAA ATG ATA CCC GCG
 ala met ala ser thr ser gly leu arg leu val ala ala arg ala glu met ile pro ala
 121/41 151/51
 ATC ACG AAA TAC ATG TCG GCG CTG GAC CTC GCG GTG CTG GCG AGC TCG ACC GGA CAC GAT
 ile thr lys tyr met ser ala leu asp val ala val leu ala ser ser thr gly his asp
 181/61 211/71
 GTG GAG GCG GCG CAG AAA AAC TTC ACC GCG CGC AAG TAC GAG CTG CAG ACC CGA CTG GCG
 val glu gly ala glu lys asn phe thr ala arg lys tyr glu leu glu thr arg leu ala
 241/81 271/91
 GAC ACC GAC CTC ATC GCA GAC GTG CCG TCG GGA GTG AAC ACC CTG CTC AAC GCG GGT GAG
 asp thr asp val ile ala asp val arg ser gly val asn thr leu leu asn gly gly glu
 301/101 331/111
 GCG CTG CTG GAT AAG ATG CTG GCG GAC AGC ATC GGT TTG CCG GAT C
 ala leu leu asp lys met leu ala asp ser ile gly leu arg asp

SEQ ID N° 21A'

FIGURE 21A'

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1/1                               31/11
CGA TCG CGC TTC TGC CGC TGG TAG TGG CGA TGG TOT TAG CAG GAT TGC GGC TCG AGG CTG
arg ser arg phe cys arg trp AMB trp arg trp cys AMB gln asp cys gly ser arg leu
61/21                               91/31
CGA TGG CGA GCA CCA GCG GCC TGC GGC TGG TCG CCG CGC GCG GCG AAA TGA TAC CCG CGA
arg trp pro ala pro ala ala cys gly trp ser pro arg ala pro lys CPA tyr pro arg
121/41                               151/51
TCA CGA AAT ACA TGT CGC CGC TGG ACG TCG CCG TGC TGG CGA GGT CGA CCG GAC ACG ATG
ser arg asn thr cys arg arg trp thr ser pro cys trp pro ala arg pro asp thr met
181/61                               211/71
TGG AGG GGG CGC AGA AAA ACT TCA CGC CGC GCA AGT ACG AGC TGC AGA CCG GAC TGG CCG
trp arg gly arg arg lys thr ser pro pro ala ser thr ser cys arg arg asp trp pro
241/81                               271/91
ACA CGC ACG TCA TCG CAG ACG TGC GGT CGC GAG TGA ACA CCG TGC TCA ACG GCG CTC AGG
thr pro thr ser ser gln thr cys gly arg glu CPA thr arg cys ser thr ala val arg
301/101                               331/111
CGC TGC TGG ATA AGA TGC TGG CCG ACA GCA TCG GGT TCG GGG ATC
arg cys trp ile arg cys trp pro thr ala ser ala cys gly ile

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SEQ ID N° 21B'

FIGURE 21B'

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1/1                               31/11
CAC GAT CGC GCT TCT GCC GCT GGT AGT GGC GAT GGT GTT AGC AGG ATT GCG GGT CGA GCG
his asp arg ala ser ala ala gly ser gly asp gly val ser arg ile ala gly arg gly
61/21                               91/31
TGC GAT GGC CAG CAC CAG CCG GCT GTC GCT GGT CGC CGC GCG CCG CGA AAT GAT ACC CCG
cys asp gly gln his gln arg pro ala ala gly arg arg ala arg arg asn asp thr arg
121/41                               151/51
GAT CAC GAA ATA CAT CTC GGC GCT GGA GGT CCG GCT GCT GGC CAG CTC GAC CCG ACA CGA
asp his glu ile his val gly ala gly arg arg arg ala gly gln leu asp arg thr arg
181/61                               211/71
TGT GGA GGG GGC GCA GAA AAA DTT CAC CGC CCG CAA GTA CGA GCT GCA GAC CCG ACT GGC
cys gly gly gly ala glu lys leu his arg pro gln val arg ala ala asp ala thr gly
241/81                               271/91
CGA CAC CGA CGT CAT CCG AGA GGT GCG GTC GCG AGT GAA CAC GGT GCT CAA CCG CCG TCA
arg his arg arg his arg arg arg ala val gly ser glu his ala ala gln arg arg ser
301/101                               331/111
GGC GCT GCT GGA TAA GAT GCT GGC CGA CAG CAT CCG GGT GCG GGA TC
gly ala ala gly GGN asp ala gly arg gln his arg leu ala gly

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SEQ ID N° 21C'

FIGURE 21C'

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séquence Rv3169c prédite par Cole et al. (Nature 393:537-544) et contenant Seq21A'

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1/1                               31/11
gtg acc atg ttc gcc cgc cgg acc atc cgg gcc gcc gcc gcc tct gat att tcc gcc
val thr met phe ala arg pro thr ile pro val ala ala ala ala ser asp ile ser ala
41/21                               91/31
ccg gat caa cgg gcc cgc gcc aaa cct cag caa cgc cgg cgg tcc tgg tgg cgg cgg aac
pro ala gln pro ala arg gly lys pro gln gln arg pro pro ser trp ser pro arg asn
121/41                               131/51
tgg cgg gtc cga tgg aaa gtg ttc acc atc cgg cct ctg cgg ctg gta ggg gcc atg ggg
tbp pro val arg trp lys val phe thr ile ala leu leu pro leu val val ala met val
181/61                               211/71
tta gaa gga tgg cgg gtc gag ggt gcc atg gcc acc acc ggc ctg cgg ctg gtc gcc
leu ala gly leu arg val glu ala ala met ala ser thr ser gly leu arg leu val ala
241/81                               271/91
ggg cgg gcc gaa atg ata ccc gcc atc acc aaa tac arg tgg gcc ctg gac gtc gcc ggg
ala arg ala glu met ile pro ala ile thr lys tyr met ser ala leu asp val ala val
301/101                               331/111
cgg gcc acc tgg acc gga caa gat gta gag ggg gcc cag aaa aac tcc acc gcc cgg gag
leu ala ser ser thr gly his asp val glu gly ala gln lys asn phe thr ala arg lys
361/121                               391/131
tac gag ctg cag acc gga ctg gcc gac acc gcc gtc atc gaa gac gta cgg tgg gga gta
tyr glu leu gln thr arg leu ala asp thr asp val ile ala asp val arg ser gly val
421/141                               451/151
aac cgg ctg ctc acc gcc ggt cag gcc ctg ctg gat aag gta ctg gcc gac aga atc gcc
asn thr leu leu asn gly gly gln ala leu leu asp lys val leu ala asp ser ile gly
481/161                               511/171
ttg cgg gat cgg gtc acc gcc tac ggg cgg ctg ctg ctg acc gcc acc gta atk gac
leu arg asp arg val thr ala tyr ala pro leu leu leu thr ala gln asn val ala asp
541/181                               571/191
ggg tgg gta cgg gtt gac acc gag caa atc cga acc cag gta cag ggt ttg acc cga gcc
ala ser val arg val asp ser glu gln ile arg thr gln val gln gly leu ser arg ala
601/201                               631/211
gtc gcc gcc cgg gga atg acc atg cag gag atc cgg gta acc cga gcc gcc gac ctt
val gly ala arg gly gln met thr met gln glu ile leu val thr arg gly ala asp leu
661/221                               691/231
gcc gag cgg caa ctg cgc acc gcc atg gtt acc ctg gcc gcc acc gaa ccc tgg acc ctg
ala glu pro gln leu arg ser ala met val thr leu ala gly thr glu pro ser thr leu
721/241                               751/251
ctc ggg atg acc gcc ggc cgc ctc ggt gca gcc tgg cgg gac acc aag acc ctg cag cag caa
phe gly met ser ala ala leu gly ala gly ser pro asp thr lys asn leu gln gln gln
781/261                               811/271
atg gta acc aag arg gcc atc atg tcc gat cgg gcc gtt gcc ctg gtc acc aac caa gag
met val thr arg met ala ile met ser asp pro ala val ala leu val asn asn pro glu
841/281                               871/291
ctg atg caa tgg ata cag atc acc cgg gaa att gcc gag aag gta acc acc gac acc acc
leu leu his ser ile gln ile thr arg asp ile ala glu gln val ile thr asp thr thr
901/301                               931/311
gag ggg gta aag arg gcc gta gaa acc cag gcc acc gac cgg cgg gac gcc gcc att cgg
glu ala val thr lys ser val gln ser gln ala thr asp arg arg asp ala ala ile arg
961/321                               991/331
gac gcc gta ctg gta atg gcc gcc acc gcc acc gcc atc gtc gcc gta ctg gta gta gta
asp ala val leu val leu ala ala ile ala thr ala ile val val val leu val val ala

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SEQ ID N° 21F

FIGURE 21D
FEUILLE DE REMPLACEMENT (REGLE 26)

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1021/341
 cgc aag ctg gtc ggg cag arg cgg gta ctg cgt gat ggg gag ctc aag gtt gct cat acc
 arg thr leu val gly pro met arg val leu arg asp gly ala leu lys val ala his thr
 1081/361
 gat ctc gac ggc gag atc ggc ggc gtc cgc gcc ggc gag gag cgc atc ccc gag cca ctg
 asp leu asp asp gly glu ile ala ala val arg ala gly asp glu pro ile pro glu pro leu
 1141/381
 gog gtg tac acc acc gag gaa atc ggt cag gtc ggc aat ggc gtc gac gag ctg ccc acc
 ala val tyr thr thr glu glu ile gly gln val ala his ala val asp glu leu his thr
 1201/401
 cgg gcc ctg ttg ctg ggc ggc gag gaa acc cgg ttg cga ctg ctg gtc aac gag atg ttt
 arg ala leu leu leu ala gly gln glu thr arg leu arg leu leu val acc glu met phe
 1261/421
 gag acc atg tgg cgg cgt acc cgt ttc ctg gtc gac cag cag ctg tgg gtc acc gac aac
 glu thr met ser arg arg ser arg ser leu val asp gln gln leu ser val ile asp gln
 1321/441
 ctg gag cgc aac gag gag gat ccc gcc cga ctc gac acc ctt ttc cgg ctc gat ccc ctg
 leu glu arg asn glu glu asp pro ala arg leu asp ser leu phe arg leu asp his leu
 1381/461
 gcc gcc cgg ctg cgc acc acc gcc aac cgc ctc ctg ggc ctg gcc ggt gag cag att acc
 ala ala arg leu arg arg asn ser ala asn leu leu val leu ala gly ala gln ile thr
 1441/481
 cgt gac ccc cgc gag cgg gtc cgc cgc tca acc ggc atc acc gcc gcc gtc tca gag gtc
 arg asp his arg glu pro val pro leu ser thr val ile ser ala ala val ser glu val
 1501/501
 gag gac tat cgt cgc gtc gac atc ggc agg gta ccc gac tgt ggc gta gtc gcc gcc ggc
 glu asp tyr arg arg val asp ile ala arg val pro asp cys ala val val gly ala ala
 1561/521
 gct ggc ggc gtc att cat ctg ctt gcc gag ctg atc gac acc ggc ctg cgc tac tgg tca
 ala gly gly val ile his leu leu ala glu leu ile asp acc ala leu arg tyr ser ser
 1621/541
 ccc acc acc ccc gct cgc gtt gcc gcc gcc acc gcc acc gac gaa gcc agt gtt ctg ctg cgc
 pro thr thr pro val arg val ala ala ala ile gly ser glu gly ser val leu leu arg
 1681/561
 acc tgg gat tcc gcc ctg ggc atg acc gat gcc gat cgg cgg atg gcc aat atg cgg ctg
 ile ser asp ser gag leu gly met thr asp ala asp arg arg met ala asn met arg leu
 1741/581
 cgg gcc gcc ggt gag gac acc cgg gat agt gcc cgc aac atg ggc ctg ttc gta gtc gcc
 arg ala gly gly glu val thr pro asp ser ala arg his met gly leu phe val val gly
 1801/601
 cgg ctg gcc ggt cgc aac gcc atc cga gtc ggc ctg cgc ggt cgc gtc acc ggt gaa cag
 arg leu ala gly arg his gly ile arg val gly leu arg gly pro val thr gly glu gln
 1861/621
 gcc acc gcc acc acc gcc gag gtc ttc ctg cgc gta gcc gtc ctc gag ggc acc gcc ccc
 gly thr gly thr thr ala glu val tyr leu pro leu ala val leu gln gly thr ala pro
 1921/641
 gag cag ccc cca aag cgc cgg gta ttt gcy atc aag cag cgc tgc ccc gaa ccc gag gcy
 ala gln pro pro lys pro arg val phe ala ile lys pro pro cys pro gln pro ala ala
 1981/661
 gcc gat cgg cgg gac gtt ccc gcc gcc atc ggc cgc cta cca cgg gtc acc atg ctc cgc
 ala asp pro thr asp val pro ala ala ile gly pro leu pro pro val thr leu leu pro

SEQ ID N° 21D (suite 1)

FIGURE 21D (suite 1)

FEUILLE DE REMPLACEMENT (REGLE 26)

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2041/681
 cgc cgt acc ccg ggg tcc agt ggc atc gcc gac gtt ccg ggc cag ccg atg cag cag ccg
 arg arg thr pro gly ser ser gly ile ala asp val pro ala gln pro met gln gln arg
 2101/701
 cgg cgc gag ctg aaa acc ccc tgg tgg gag gat agg att caa cag gag ccc aaa caa ccg
 arg arg glu leu lys thr pro trp trp glu asp arg phe gln gln glu pro lys gln pro
 2161/721
 ccc gaa cca gaa ccg gga ccc ggc ccc ccc gcc aac ccc ggc cca cag gag ggc ccc
 pro ala pro glu pro arg pro ala pro pro pro ala lys pro ala pro pro ala gly pro
 2221/741
 gtt gat gac gac gtc atc tac tgg tgg atg ctg tcc gag atg atg ggt gac ccg cag gag
 val asp asp asp val ile tyr arg arg met leu ser glu met val gly asp pro his glu
 2281/761
 ctg gcc ccc agc ccc gat ctg gac tgg aag tgg gtc tgg gac ccc gcc tgg tgg gcc gcc
 leu ala his ser pro asp leu asp trp lys ser val trp asp his gly trp ser ala ala
 2341/781
 gcc gag gcc ggc gac aag ccc gtc cag tcc gcc atg gac tcc gcc ctg ccg gtc cgc gaa
 ala glu ala ala asp lys pro val gln ser arg tcc asp tyc gly leu pro val arg glu
 2401/801
 ccc ggg gcc cgg tta gtc ccg ggg ggc ggc gtc ccc gac gaa ccc gat cag gag cat ccg
 pro gly ala arg leu val pro gly ala ala val pro glu gly pro asp arg glu his pro
 2461/821
 ggt gca ggc cta gaa tcc aac gcc gga att cat ccc gcc tga gag ccg cgg ccc gcc ggt
 gly ala ala leu ala ser asn gly gly leu his pro gly arg ala pro arg his ala ala
 2521/841
 ggc gta cgc gac ccc gac ggc ggt cgt gcc tcc atc agc agc cat ttc gcc gcc gtc cgc
 ala val arg asp pro asp ala val arg ala ser ile ser ser his phe gly gly val arg
 2581/861
 acc ggg cgg tgg cat gcc cgc gag agc agt ccc ggc ccc aat cag caa tps
 thr gly arg ser his ala arg glu ser ser gln gly pro asn gln gln oxa

SEQ ID N° 21d (suite)

FIGURE 21d (suite)

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OKF d'après par Cole et al. (Nature 398:537-544) en contenantant Rv3365c

1/1 31/11
 taa gag tgc ggc cgg tgg cac ggc cgc ggc cac gtg acc atg ttc gcc cgc ccg acc atc
 och gly cys gly arg trp his gly arg gly his val thr met phe ala arg pro thr ile
 61/21 31/31
 ccg gtc ggc ggc ggc gct tct gat att tcc gcc cgc gct caa cgc gcc cgc aaa cct
 pro val ala ala ala ala ser asp ile ser ala pro ala gin pro ala arg gly lys pro
 121/41 151/51
 cag caa cgc cgc cgc tcc tgg tgg cgc cgc acc tgg ccg gtc cga tgg aaa gtg ttc acc
 gin gin ccg pro pro ser trp ser pro arg aaan trp pro val arg trp lys val phe thr
 181/61 211/71
 atc gag ctc cgc cgc ctc gta ctg ggc atg gtg tta gca gga ttg cgc gtc gag gct ggc
 ile ala leu leu pro leu val val ala met val leu ala gly leu arg val glu ala ala
 241/81 271/91
 atg gcc agc acc agc ggc ctg cgc ctg gtc gcc ggc cgc gcc gaa atg ata ccc gcc atc
 met ala ser thr ser gly leu arg leu val ala ala arg ala glu met ile pro ala ile
 301/101 331/111
 ccg aaa tac atg tgg ggc cgc gac gtc gcc gtc ctg gcc agc tgg acc gga cac gat gtc
 thr lys tyr met ser ala leu asp val ala val leu ala ser ser thr gly his asp val
 361/121 391/131
 gag ggc gcc cag aaa aac ttc acc gcc cgc aag tac gag ctg ccg acc cgc ctg gcc gac
 glu gly ala gin lys asn phe thr ala arg lys tyr glu leu gin thr arg leu ala asp
 421/141 451/151
 acc gac gtc atc gca gac gtg cgc tgc gga gtg aac acc ctg ctc aac gcc ggt cag gcc
 thr asp val ile ala asp val arg ser gly val asn thr leu leu asn gly gly gin ala
 481/161 511/171
 ctg ctg gat aag gtc ctg gcc gac acc atc gcc tgg cgc gat cgc gtc acc gcc tac gcc
 leu leu asp lys val leu ala asp ser ile gly leu arg asp arg val thr ala tyr ala
 541/181 571/191
 ccg ctg ctg ttg acc gcc cag aac gtg att gac ggc tgg gtc cgc gtt gac acc gag caa
 pro leu leu leu thr ala gin asn val ile asp ala ser val arg val asp ser glu gin
 601/201 631/211
 atc cga acc cag gtc cag ggt ttg agc cga gcc gtc gcc gcc gcc cag atg acc atg
 ile arg thr gin val gin gly leu ser arg ala val gly ala arg gly glu met thr met
 661/221 691/231
 cag gag atc ctg gtc act cgc cgc gcc gac ctt gcc gag cga aaa ctg cgc agc gcc atg
 gin glu ile leu val thr arg gly ala asp leu ala glu pro gin leu arg ser ala met
 721/241 751/251
 gtt acc ctg gcc gcc acc gaa acc tgg acc ctg ttc gcc atg acc gcc gcc ctc ggt gca
 val thr leu ala gly thr gin pro ser thr leu phe gly met ser ala ala leu gly ala
 781/261 811/271
 gcc tgc ccg gac acc aag aac ctg cag aag caa atg ggc acc agg atg gcc atc atg ttc
 gly ser pro asp thr lys asn leu gin gin met val thr arg met ala ile met ser
 841/281 871/291
 gat ccg gcc gtc gcc ctg gtc aac aac caa gag ctg ctg ctc tgg ata ccg atc acc gcc
 asp pro ala val ala leu val asn asn pro glu leu leu his ser ile gin ile thr arg

SEQ ID N° 21F

FIGURE 21F

85/185

901/301 931/311
 gac att gcc gag cag gtc atc acc gcc acc acc gag ggc gtc agc aag tgc gtc caa acc
 asp ile ala glu gln val ile thr asp thr thr glu ala val thr lys ser val gln ser
 961/321 991/331
 cag gcc acc gac cgg cgg gat gcc gcc att cgc gac gcc gtc ctg gtc ttc gcc gcc atc
 gln ala thr asp arg arg asp ala ala ile arg asp ala val leu val leu ala ala ile
 1021/341 1051/351
 gcc acc gcc atc gtc gtc gtc ttc gtc gtc gcc gcc acc ctg gtc gcc gcc atg cgg gta
 ala thr ala ile val val val leu val val ala arg thr leu val gly pro met arg val
 1081/361 1111/371
 ctg cgt gat ggg gcc ctc aag gtt gct cat acc gat ctc gac gcc gag atc gcc gcc gtc
 leu arg asp gly ala leu lys val ala his thr asp leu asp gly glu ile ala ala val
 1141/381 1171/391
 cgc gcc gcc gac gag cgc atc ccc gag ccc ctg gcc gtc tac acc acc gag gaa atc cgt
 arg ala gly asp glu pro ile pro glu pro leu ala val tyr thr thr glu glu ile gly
 1201/401 1231/411
 cag gtc gcc cat gcc gtc gac gag ctg cac acc gcc gcc ctg ttc ctg gcc gcc gag gaa
 gln val ala his ala val asp glu leu his thr arg ala leu leu ala gly glu glu
 1261/421 1291/431
 acg cgt ttc aga ctc ctg gtc aac gag atg ttc gag acc atg tgc gcc cgt acc cgt tcc
 thr arg leu arg leu val asn glu met phe glu thr met ser arg arg ser arg ser
 1321/441 1351/451
 ctg gtc gac cag cag ctg tgc gtc atc gac caa ctg gcc gcc aac gag gag gat ccc gcc
 leu val asp gln gln leu ser val ile asp gln leu glu arg asn glu glu asp pro ala
 1391/461 1411/471
 cga ctc gac acc ctt ttc cgg ctc gat cac ctg gcc gcc cgg ctg gcc gcc aac acc gcc
 arg leu asp ser leu phe arg leu asp his leu ala ala arg leu arg arg asn ser ala
 1441/481 1471/491
 aac ctg ctg gtc ctg gcc ggt gcc cag att acc cgt gcc cac cgc gag cgc gtc cgc ctg
 acc leu leu val leu ala gly ala gln ile thr arg asp his arg glu pro val pro leu
 1501/501 1531/511
 tca acc gtc atc acc gcc gcc gtc tca gag gtc gag gac tac gcc gcc gtc gcc atc gcc
 ser thr val ile ser ala ala val ser glu val glu asp tyr arg arg val asp ile ala
 1561/521 1591/531
 agg gta ccc gac tgt gcc gta gcc gcc gaa gcc gct ggt gcc gtc att cat ctg ctt gcc
 arg val pro asp cya ala val val gly ala ala ala gly gly val ile his leu leu ala
 1621/541 1651/551
 gag ctg atc gac aac gcc ttc cgc tac tgc tca cgc acc acc ccc gcc cgg gtt gcc gcc
 glu leu ile asp asn ala leu arg tyr ser ser pro thr thr pro val arg val ala ala
 1681/561 1711/571
 gca atc gcc acc gaa gcc agt gtt ctg ctg cga atc tgc gat tcc gcc ctg gcc arg acc
 ala ile gly ser glu gly ser val leu leu arg ile ser asp ser gly leu gly met thr
 1741/581 1771/591
 gat gcc gat cgg cgg atg gcc aat arg cgg ctg cgc gcc gcc gat gag gcc acc cgc gat
 asp ala asp arg arg met ala asn met arg leu arg ala gly gly glu val thr pro asp
 1801/601 1831/611
 agt gcc cgg ccc atg ggt atg ttc gta gcc gcc gcc acc gcc ggt cgg acc gcc atc cga
 ser ala acc his met gly leu phe val val gly arg leu ala gly acc his gly ile arg

SEQ ID N° 21F (suite 1)

FIGURE 21F (suite 1)

86/185

1861/621 1891/631
 gtc ggg ctg tgc ggt cgc gtc aac ggt gaa cag gcc acc gcc acc acc gcc gag gtc tgc
 val gly leu arg gly pro val thr gly glu gln gly thr gly thr thr ala glu val tyr
 1921/641 1951/651
 ctg cgc cta gcc gtc ctc gag ggg acg gcc cca gcc cag cgc cca aag cgc cgg gta ttt
 leu pro leu ala val leu glu gly thr ala pro ala gln pro pro lys pro arg val phe
 1981/661 2011/671
 gcc atc aag cgc cgc tgc cct gaa ccc gcc gcc gcc gat cgc acg gac gtt ccc gcc gcc
 ala ile lys pro pro cys pro glu pro ala ala ala asp pro thr asp val pro ala ala
 2041/681 2071/691
 atc ggg aag cta cca cgc gtc aag ttg ctc cag cgc cgt acc cgc ggg acc agt ggc atc
 ile gly pro leu pro pro val thr leu leu pro arg arg thr pro gly ser ser gly ile
 2101/701 2131/711
 gcc gac gtc cgc gcc cag cgc atg cag cag cgc cgc cgc gag ctg aaa acc ccc tgg cgc
 ala asp val pro ala gln pro met gln gln arg arg arg glu leu lys thr pro trp trp
 2161/721 2191/731
 gag gat agc ttt caa cag gag ccc aac cca cgc ccc gaa cca gaa cgc cgc gcc gcc gcc
 glu asp arg phe gln gln glu pro lys gln pro pro ala pro glu pro arg pro ala pro
 2221/741 2251/751
 cgc ccc gcc aaa ccc gcc cca cgc gcc gcc gcc gcc gtt gac gac gac gtc atc tac cgc cgc
 pro pro ala lys pro ala pro pro ala gly pro val asp asp asp val ile tyr arg arg
 2281/761 2311/771
 atg ctc tcc gag atg gtc ggt gac cgc cac gag ctg gcc ccc agc ccc gat ctg gac tgc
 met leu ser glu met val gly asp pro his glu leu ala his ser pro asp leu asp trp
 2341/781 2371/791
 aag tgc gtc tgc gac aac gcc tgc tgc gcc gcc gcc gcc gag gcc gcc gcc gac acc gcc gtc cag
 lys ser val trp asp his gly trp ser ala ala ala glu ala ala asp lys pro val gln
 2401/801 2431/811
 tcc cgc aag gac tac gcc ctg acg gtc cgc gaa ccc ggg gcc cgc cta gtc cgc ggc gcc
 ser arg thr asp tyr gly leu pro val arg glu pro gly ala arg leu val pro gly ala
 2461/821 2491/831
 gcc gtc ctc gag gga ccc gat cgc gag cat cgc ggt gca gcc cta gca tcc aac gcc gcc
 ala val pro glu gly pro asp arg glu his pro gly ala ala leu ala ser asn gly gly
 2521/841 2551/851
 ctt cat ccc gcc cga gcc cgc cgc ccc gcc gcc gct gcc gta cgc gcc ccc gcc gcc gtt agt
 leu his pro gly arg ala pro arg his ala ala ala val arg asp pro asp ala val arg
 2581/861 2611/871
 gcc tcc atc agc agc cat ttc gcc gcc gtc gcc acc ggg cgc tgc cat gcc cgc gcc gcc
 ala ser ile ser ser his phe gly gly val arg thr gly arg ser his ala arg glu ser
 2641/881
 agt cag gga tcc aat cag caa tgc
 ser gln gly pro asn gln gln OPA

SEQ ID N° 21f (suite 2)

FIGURE 21f (suite 2)

87/185

31/11
 CTA CGA CAA GGC AAA GGA GCA CAG GGT GAA GCG TGG ACT GAC GGT CCG GGT AGC CGG AGC
 leu arg gln gly lys gly ala gln gly glu ala trp thr asp gly arg gly ser arg ser
 61/21
 CGC CAT TCT GGT CGC AGG TCT TTC CGG ATG TTC AAG CAA CAA GTC GAC TAC AGG AAG CGG
 arg his ser gly arg arg ser phe arg met phe lys gln gln val asp tyr arg lys arg
 121/41
 TGA GAC CAC GAC CGC GGC AGG CAC GAC GGC AAG CGC CGG CGC GTC CCG GCG GAA GGT
 OPA asp his asp arg gly arg his asp gly lys pro arg arg arg ile arg ala glu gly
 181/61
 CGT CAT CGA GGG TAA GGA GCA GAA GGT CAG CGG GTC TGT GGT GTG CAC AAC CGC GGC CGG
 arg his ser arg arg GCH gly pro glu arg his arg val cys gly val his asn arg gly arg
 241/81
 CAA TGT CAA CAT CGC GAT CGG CGG GGC GGC GAC CGG GAT TGG CGC GGT GGT CAC CGA CGG
 gln cys gln his arg asp arg arg gly gly asp arg his cys arg arg ala his arg arg
 301/101
 CAA CCC TCC GGA GGT GAA GTC CGT TGG GCT CGG TAA CGT CAA CGG CGT CAC GCT GGG ATA
 gln pro ser gly gly glu val arg trp ala arg GCH arg gln arg arg his ala gly ile
 361/121
 CAC GTC GGG CAC CGG ACA GGG TAA CGC TGG GCA ATT AAG GAC GGC AGC CAC TAC AAG ATC
 his val gly his arg thr gly GCH arg ser ala thr lys asp gly ser his tyr lys ile

SEQ ID N° 22A

FIGURE 22A

32/11
 TAC GAC AAG GCA AAG GAG CAC AGG CTC AAG GGT GGA CTG ACG GTC GGG GTA GGC GGA GGC
 tyr asp lys ala lys glu his arg val lys arg gly leu thr val ala val ala gly ala
 62/21
 GGC ATT CTG GTC GCA GGT CTT TCC GGA TGT TGA AGC AAC AAG TCG ACT ACA GGA AGC GGT
 ala ile leu val ala gly leu ser gly cys ser ser asn lys ser thr thr gly ser gly
 122/41
 GAG ACC AUG ACC GCG GCA GGC ACG ACG GCA AGC CGC GGC GCG GCA TCC GGG CGG AAG CTC
 glu thr thr thr ala ala gly thr thr ala ser pro gly ala ala ser gly pro lys val
 182/61
 GTC ATC GAC GGT AAG GAC CAG AAC GTC ACC GGC TCT GTG GTG TGC ACA ACC GCG GCG GGC
 val ile asp gly lys asp gln asp val thr gly ser val val val cys thr thr ala ala gly
 242/81
 AAT GTC AAC ATC GCG ATC GGC GGG GGG GCG ACC GGC ATT GCG GCG GTG GTC ACC GAC GGC
 asn val asn ile ala ile gly gly ala ala thr gly ile ala ala val leu thr asp gly
 302/101
 AAC CCG CGG GAG GTG AAC TCC GTT GGG CTC GGT AAC GTC AAC GGC GTC ACG CTC GGA TAC
 asn pro pro glu val lys ser val gly leu gly asn val asn gly val thr leu gly tyr
 362/121
 ACG TCG GGC ACC GGA CAG GGT AAC GCT CGG CAA CGA AGG ACC GCA GGC ACT ACA ACA TC
 thr ser gly thr gly gln gly asn ala arg glu pro arg ser ala ala thr thr arg

SEQ ID N° 22B

FIGURE 22B

88/185

33/11
 AGC ACA AGG CAA AGG AGC ACA GGG TGA AGC GTG GAC TGA CGC TCG CGG TAG CGG GAG CCG
 thr thr arg gln arg ser thr gly oia ser val asp oia arg ser arg amh pro glu pro
 63/21
 CCA TTC TGG TCG CAG GTC TTT CCG GAT GTT CAA GCA ACA AGT CGA CTA CAG GAA GCG GTG
 pro phe trp ser gln val phe pro asp val gln ala thr ser arg leu gln glu ala val
 123/41
 AGA CGA CGA CCG CGG CAG GCA CGA CCG CAA GCG CCG GCG CGG GAT CGG GCG CGA AGG TCG
 arg pro arg pro arg gln ala arg arg gln ala pro ala pro his pro gly arg arg ser
 183/81
 TCA TCG AGC GTA AGG ACC AGA AGC TCA CCG GGT CTG TGG TGT GCA CAA CCG CCG CCG GCA
 ser ser thr val arg thr arg thr ser pro gly leu trp cys ala gln pro arg pro ala
 243/81
 ATG TCA ACA TCG CGA TCG GCG GGG CCG CGA CCG GCA TTG CCG CCG TGC TCA CCG AGG GCA
 met ser thr ser arg ser ala gly arg arg pro ala leu pro pro cys ser pro thr ala
 303/101
 ACC CTC CCG AGG TGA AGT CCG TTG GGC TCG GTA AGC TCA ACC GCG TCA GCG TGG GAT ACA
 thr leu arg arg oia ser pro leu gly ser val thr ser thr ala ser arg trp asp thr
 363/121
 COT CGG GCA CCG GAC AGG GTA AGC CTC GGC AAC CAA GGA CGG CAG CCA CTA CAA GAT C
 arg arg ala pro asp arg val thr leu gly asn gln gly arg gln pro leu gln asp

SEQ ID N° 22C

FIGURE 22C

31/11
 GCA CAA CCG CGG CCG GCA ATG TCA ACA TCG CGA TCG CGG GCG CGA CCG GCA TTG CCG
 ala gln pro arg pro ala met ser thr ser arg ser ala gly arg arg pro ala leu pro
 61/21
 CCG TGC TCA CCG AGG GCA ACC CTC CCG AGG TGA AGT CCG TTG GCG TCG GTA AGC TCA AGG
 pro cys ser pro thr ala thr leu arg arg oia ser pro leu gly ser val thr ser thr
 121/41
 GCG TCA CCG TCG GAT ACA COT CCG GCA CCG GAC AGG GTA AGC COT CGG CAA CCA AGG AGG
 ala ser arg trp asp thr arg arg ala pro asp arg val thr pro arg gln pro arg thr
 181/81
 GCA GCG ACT ACA AGA TCA CAG GGT GAA GCG TGG ACT GAC GGT CCG GGT AGC CCG AGC CCG
 ala ala thr thr arg ser gln gly glu ala trp thr asp gly arg gly ser arg ser arg
 241/81
 CAT TCT GGT CCG AGG TCT TTC CCG ATG TTC AAG CAA CAA GTC GAC TAC AGG AAG CCG TGA
 his ser gly arg arg ser phe arg met phe lys gln gln val asp tyr arg lys arg oia
 301/101
 GAC CAC GAC CCG GCG AGG CAC GAC GCG AAG CCG CCG CCG TCG GCG CCG AAG GTC GTC
 asp his asp arg gly arg his asp gly lys pro arg arg ser gly pro lys val val
 361/121
 ATC GAC GGT AAG GAC CAG AAC GTC ACC GCG TTC GTG GTC TCG ACA ACC GCG GCG GCG AAT
 ile asp gly lys asp gln asn val thr gly ser val val cys thr thr ala ala gly asn
 421/141
 GTC AAG ATC GCG ATC CCG CCG GCG GCG ACC GCG ATT CCG GCG GTC CTC ACC GAC GCG AAC
 val asn ala ala ile gly gly ala ala thr gly ile ala ala val leu thr asp gly asn
 481/181
 COT CCG GAG GTG AAG TCT GTT CCG CTC GGT AAC GTC AAC GCG CTC AGG CTO GGA TAC AGG
 pro pro glu val lys ser val gly leu gly asp val asn gly val thr leu gly tyr thr
 541/181
 TCG GCG ACC CGA CAG GGT AAC GCG TCG GCA ACC AAG GAC GCG AGG CAC TAC AAG ATC
 ser gly thr gly gln gly asn ala ser ala thr lys asp gly ser his tyr lys ile

SEQ ID N° 23A

89/185

32/11
 CAC AAC CGC GGC CGG CAA TGT CAA CAT CGC GAT CGG CGG GGC GAC CGG CAT TGC CGC
 his asp arg gly arg gln cys gln his arg asp arg arg gly gly asp arg his cys arg
 62/21
 CGT GCT CAC CGA CGG CAA CCC TCC GGA GGT GAA GTC CGT TGG GGT CGG TAA GGT CAA CGG
 arg ala his arg arg gln pro ser gly gly gln val arg trp ala arg GCH arg gln arg
 122/41
 CGT CAC GCT GGG ATA CAC CTC GGG CAC CGG ACA GGG TAA GGC CTC GGC AAC CAA GGA CGG
 arg his ala gly ile his val gly his arg thr gly GCH arg leu gly asp gln gly arg
 182/61
 CAG CCA CTA CAA GAT CAC AGG GTG AAG CGT GCA CTG ACC CTC GCG GTA GCC GGA GCG GCG
 gln pro leu gln asp his arg val lys arg gly leu thr val ala val ala gly ala ala
 242/81
 ATT CTG GTC GCA GGT GTT TCC GGA TGT TCA AGC AAC AAG TCG ACT ACA GGA AGC GGT GAG
 ile leu val ala gly leu ser gly cys ser ser asp lys ser thr thr gly ser gly glu
 302/101
 ACC AGC ACC GCG GCA GGC ACG ACC GCA AGC CCC GGC GGC GGT CCG GCG CGA AGG TCG TCA
 thr thr thr ala ala gly thr thr ala ser pro gly ala ala pro gly arg arg ser ser
 362/121
 TCG ACG GTA AGG AGC AGA ACG TGA CCG GGT CCG TGG TGT GCA CAA CGG GCG CCG GCA ATG
 ser thr val arg thr arg thr ser pro ala pro tip cys ala gln pro arg pro ala met
 422/141
 TCA ACA TCG CGA TCG GCG GGG CGG CGA CCG GCA TTG CCG GCG TCG TCA CCG ACC GCA ACC
 ser thr ser arg ser ala gly arg arg pro ala leu pro pro cys ser pro thr ala thr
 482/161
 CTC CGG AGG TGA AGT CCG TTG GGC TCG GTA ACG TCA ACG GCG TCA CCG TGG GAT ACA CGT
 leu arg arg GBA ser pro leu gly ser val thr ser thr ala ser arg trp asp thr arg
 542/181
 CGG GCA CGG GAC AGG GTA ATG GGT CGG CAA GCA AGG ACG GCA GCG ACT ACA AGA TC
 arg ala pro asp arg val thr pro arg gln pro arg thr ala ala thr thr arg

SEQ ID N° 23B

FIGURE 23B

90/185

33/11
 ACA ACC GCG SCC GGC AAT GTC AAC ATG GCG ATC GCG GGG GCG SCC ACC GGC ATT GGC GCG
 thr thr ala ala gly asn val asn ile ala ile gly gly ala ala thr gly ile ala ala
 63/21
 GTC CTC ACC GAC GGC AAC COT CCG GAG GTG ARG TCC GTT GGG CTC GGT AAC GTC AAC GGC
 val leu thr asp gly asn pro pro glu val lys ser val gly leu gly asn val asn gly
 123/61
 GTC ACC CTG GGA TAC ACG TCG GGC ACC GGA CAG GGT AAC GGC TCG GCA ACC AAG GAC GGC
 val thr leu gly tyr thr ser gly thr gly gln gly asn ala ser ala thr lys asp gly
 183/61
 AGC CAC TAC AAG ATC ACA GCG TGA AGC GTG GAC TGA CCG TCG CCG TAG CCG CAT CCG CCA
 ser his tyr lys ile thr gly opa ser val asp opa arg ser arg ANE pro glu pro pro
 243/81
 TTC TCG TCG CAG GTC TTT CCG GAT GTT CAA GCA ACA AGT CGA CTA CAG GAA GCG GTG AGA
 phe asp ser gln val phe pro asp val gln ala thr ser arg leu gln glu ala val arg
 303/101
 CCA GGA CCG CCG CAG GCA CGA CCG GAA GCG CCG GCG CCG CTC CCG GCG GAA GGT CGT CAT
 pro arg pro arg gln ala arg arg gln ala pro ala pro leu arg ala glu gly arg his
 363/121
 CGA CCG TAA GGA CCA GAA GGT CAC CCG CTC CGT GGT GTG CAC AAC CCG GCG CCG CAA TGT
 arg arg OCH gly pro glu arg his arg leu arg gly val his asn arg gly arg gln cys
 423/141
 CAA CAT CCG GAT CCG CCG GCG GCG GAC CCG CAT TCC CCG GGT GGT CAC CGA CCG CAA CCC
 gln his arg asp arg arg gly gly asp arg his cys arg arg ala his arg arg gln pro
 483/161
 TCC GGA GGT GAA GTC COT TGG GCT CCG TAA GGT CAA CCG GGT CAC GGT GCG ATA CAG GTC
 ser gly gly glu val arg trp ala arg OCH arg gln arg arg his ala gly ile his val
 543/181
 GGG CAC CGG ACA GGG TAA CCG CTC GCG AAC CAA GGA CCG CAG CCA CTA CAA GAT C
 gly his arg thr gly OCH arg leu gly ser gln gly arg gln pro leu gln asp

SEQ ID N° 23C

FIGURE 23C

91/185

31/11
 CTA ACG ACA GGC AAA GGA GCA CAG GGT GAA GCG TGG ACT GAC GGT GCG GGT AGC CGG AGC
 leu thr thr gly lys gly ala gln gly glu ala asp thr asp gly arg gly ser arg ser
 61/21
 GCG CAT TCT GGT GCG AGG TCT TTC GGG ATG TTC AAG CAA CAA GTC GAC TAC AGG AAG CCG
 arg his ser gly arg arg ser phe arg met phe lys gln gln val asp tyr arg lys arg
 121/41
 TGA GAC CAC GAC GCG GCG AGG CAC GAC GGC AAG CCC GCG GCG GCG TCG GGG CCG AAG GTC
 OPA asp his asp arg gly arg his asp gly lys pro arg arg arg ser gly pro lys val
 181/61
 GTC ATC GAC GGT AAG GAC CAG AAC GTC ACC GCG TCG GTG GTC TCG ACA ACC GCG GCG GCG
 val ile asp gly lys asp gln asn val thr gly ser val val cys thr thr ala ala gly
 241/81
 AAT CTC AAC ATC GCG ATC GCG GCG GCG GCG ACC GCG ATT GCG GCG GTG CTC ACC GAC GCG
 asn val asn ile ala ile gly gly ala ala thr gly ala ala ala val leu thr asp gly
 301/101
 AAC CCT CCG GAG GTG AAG TCG GTT GCG CTC GGT AAC GTC AAC GCG GTC ACG CTS GGA TAC
 asn pro pro glu val lys ser val gly leu gly asn val asn gly val thr leu gly tyr
 361/121
 ACG TCG GCG ACC GGA CAG GGT AAC GCG TCG GCA ATC AAG AAC GCG AGC CAC TAC AAG ATC
 thr ser gly thr gly gln gly asn ala ser ala thr lys asp gly ser his tyr lys ala

SEQ ID N° 24A

FIGURE 24A

32/11
 TAA GGA CAG GCA AAG GAG CAC AGG GTC AAG CCG GGA CTS ACG GTC GCG GTA GCG GGA GCG
 och arg gln ala lys glu his arg val lys arg gly leu thr val ala val ala gly ala
 62/21
 GCC ATT CTG GTC GCA GGT GTT TCC GGA TGT TCA ACC AAC AAG TCG ACT ACA GGA AGC GGT
 ala ile leu val ala gly leu ser gly cys ser ser asn lys ser thr thr gly ser gly
 122/41
 GAG ACC ACG ACC GCG GCA GCG ACG ACG GCA ACC CCC GCG GCG GGT CCG GCG CCA AGG TCG
 glu thr thr thr ala ala gly thr thr ala ser pro gly ala ala pro gly arg arg ser
 182/61
 TCA TCG ACG GTA AGG ACC AGA ACG TCA CCG GGT CCG TCG TGT GCA CAA CCG GCG CCG GGA
 ser ser thr val arg thr arg thr ser pro ala pro trp cys ala gln pro arg pro ala
 242/81
 ATG TCA ACA TCG CGA TCG GCG GCG GCG CCA CCG GCA TTG GCG CCG TAC TCA CCG ACC GCA
 met ser thr ser arg ser ala gly arg arg pro ala leu pro pro cys ser pro thr ala
 302/101
 ACC CTC CCG ACC TGA AGT CCG TTG GCG TCG CTA ACG TCA ACC GCG TCA CCG TCG GAT ACA
 thr leu arg arg OPA ser pro leu gly ser val thr ser thr ala ser arg trp asp thr
 362/121
 CCG CCG GCA CCG GAC ACG GTA ACG CCT CCG CCA CCA ACG ACG GCA GCG ACT ACA AGA TC
 arg arg ala pro asp arg val thr pro arg gln pro arg thr ala ala thr thr arg

SEQ ID N° 24B

FIGURE 24B

FEUILLE DE REMPLACEMENT (REGLÉ 26)

92/185

33/11
 AAC GAC AGG CAA AGG AGC ACA GGG TGA AGC GTG GAC TGA CGG TCG CGG TAG CCG GAG CCG
 asn asp arg gln arg ser thr gly opa ser val asp opa arg ser arg amh pro glu pro
 63/21
 CCA TTC TGG TCG CAG GTC TTT CCG GAT GTT CAA GCA ACA AAT CGA CTA CAG GAA GGG GTG
 pro phe trp ser gln val phe pro asp val gln ala thr ser arg leu gln glu ala val
 123/41
 AGA CCA CGA CCG CCG CAG GCA CGA CCG CAA GCG CGG GCG CCG CTC CCG GCG GAA GGT CGT
 arg pro arg pro arg gln ala arg arg gln ala pro ala pro leu arg ala glu gly arg
 183/61
 CAT CGA CCG TAA GGA CCA GAA GGT CAC CGG CTC CGT GGT GTC CAC AAC CCG GCG CCG CAA
 his arg arg och gly pro glu arg his arg leu arg gly val his asn arg gly arg gln
 243/81
 TGT CAA CAT CCG GAT CCG CCG GCG GGC GAC CCG GAT TGC CCG CGT GGT CAC CGA CCG CAA
 cys gln his arg asp arg arg gly gly asp arg his cys arg arg ala his arg arg gln
 303/101
 CCG TCG GGA GGT GAA GTC CGT TGG GCT CCG TAA GGT CAA CCG GGT CAC GGT GGG ATA CAC
 pro ser gly gly glu val arg trp ala arg och arg gln arg arg his ala gly ile his
 363/121
 GTC GGG CAC CCG ACA GGG TAA CCG CTC GGC AAC CAA GGA CCG CAG CCA CTA CAA GAT C
 val gly his arg thr gly och arg leu gly asn gln gly arg gln pro leu gln asp

SEQ ID N° 24C

FIGURE 24C

Amorce directe

5' ACC CCG CGC ACC CTC TTC 3'

SEQ ID N° 25

FIGURE 25

Amorce inverse

5' CCA GGT TGG GAT TGG CCG 3'

SEQ ID N° 26

FIGURE 26

93/185

31/11
 CCT ACC AGC AAG AGC CCA GGG CTT CAC AGG ACC TAA AAG GAG TAG CGC CCA TGG GCT TGA
 pro thr ser lys ser pro gly leu his arg thr GCH lys glu AMB arg pro trp ala OPA
 61/21
 TCC AAT TTT CCT TCC GGC CCG TGC AAT ACC ATC TGC AAG ACC AGC GAC GGC CCG TGG TTC
 ser aah phe pro ser ala pro ays aen thr ile cys lys thr ser asp gly pro trp leu
 121/41
 CGG TGG CGC AGC TTG CCG AAA GGG GGT ATG GAC CCT GCC GTA CCG TTG TIG CCA CTT GAT
 arg ser arg ser leu arg lys arg gly met asp pro ala val pro leu pro leu asp
 181/61
 GTC GTC GCT CTC CAC CCG TCG GGG GGC GAA AGC CAT TCC CAC ATT GGG ATC CTC AAA AGC
 val val ala leu his pro ser gly gly glu ser his ser asp thr gly ala leu lys thr
 241/81
 TCG GCT GAG TGT CTG CAG GGC TCC GGG GAG CAG CCG ATC ATC ACC ATG TAC GAA CTG AAT
 ser ala glu cys leu gln gly ser gly glu gln pro ile ile thr met tyr glu leu aen
 301/101
 AAG TCC CCC CCG CCG GAC TTC CAG ACA TTT GTT GTG GTT TCG GTT GAG GCC GAG GCG AGG
 lys ser pro pro arg asp phe gln thr phe val val val ser val glu ala glu ala arg
 361/121
 CTC ATT TCG CAG CAA GGG GTC TCC GGG TCG CAG CAT CGT TCC GCG GAT CGC GGC GCA GTC
 leu ile ser gln gln ala val ser gly ser gln his arg cys gly asp arg gly ala val
 421/141
 GTC GGA CGA GTC GTC GTC AAC GAC CAC GAT C
 val gly arg val val val aen asp his asp

SEQ ID N° 27A

FIGURE 27A

31/11
 GGA CCA GGA AGA GCC CAG GGC TTC ACA GGA COT AAA AGG AOT AGC GGC CAT GGG CTT GAT
 leu pro ala arg ala gln gly phe thr gly pro lys arg ser ser ala his gly leu asp
 61/21
 GCA ATT TTC CTT CCG CCG CGT GCA ATA CCA TGT GCA AGA CCA CCG ACG GCC GGT GGT TGC
 pro ile phe leu pro pro arg ala ile pro ser ala arg pro ala thr ala arg gly cys
 121/41
 GGT CGC GCA GCT TGC GGA AAC GGG GTA TGG ACC CTG CCG TAC CGT TGT TGC CAC TTG ATG
 gly arg ala ala cys gly aen gly val trp thr leu pro tyr arg cys cys his leu met
 181/61
 TCG TCG CTC TCC ACC CGT CCG GGG GCG AAA GCG ATT CCG ACA CTG CGA TCC TCA AAA CGT
 ser ser leu ser thr arg arg gly ala lys ala ile pro thr leu gly ser ser lys arg
 241/81
 CGG CTG AGT GTC TCC AGG GCT CCG GCG AGC AGC CGA TCA TCA CCA TGT ACG AAG TGA ATA
 arg leu ser val cys arg ala pro gly ser ser arg ser ser pro cys thr aen OPA ile
 301/101
 AGT CCC CCC CCG GCG ACT TCC AGA CAT TTG TTG TGG TTT CCG TTG AGC CCG AGC CGA GGC
 ser pro pro arg ala thr ser arg his leu leu trp phe arg leu arg pro arg arg gly
 361/121
 TCA TTT CCG ACG AAG CCG TCT CCG GGT CCG AGC ATC GTT GCG GCG ATC CCG GCG CAG TCG
 ser phe arg ser lys aen ser pro gly arg ser ile val ala ala ile ala ala gln ser
 421/141
 TCG GAC GAG TCG TCG TCA ACG ACC ACG ATC
 ser asp glu ser ser ser thr thr thr ala

SEQ ID N° 27B

FEUILLE DE REMPLACEMENT (REGLE 26)

94/185

33/11
TAC CAG CAA GAG CCC AGG GCT TCA CAG GAC CTA AAA GGA GTA GCG CCC ATG GGC TTG ATC
tyr gln gln glu pro arg ala ser gln asp leu lys gly val ala pro met gly leu ile
63/21
CAA TTT TCC TTC CGC CCC GTG CAA TAC CAT CTG CAA GAC CAG CGA CGG CCC GTG GTT GGG
gln phe ser phe arg pro val gln tyr his leu gln asp gln arg arg pro val val ala
123/41
GTC GGG CAG CTT GCG GAA ACG GGG TAT GGA CCC TGC CGT ACC GTT GTT GGC ACT TGA TGT
val ala gln leu ala glu thr gly tyr gly pro cys arg thr val val ala thr GPA cys
183/51
CGT CGC TCT CCA CCC GTC GGG GGG CGA AAG CCA TTC CGA CAT TGG GAT CCT CCA AAC GTG
arg arg ser pro pro val gly gly arg lys pro phe arg his trp asp pro gln asn val
243/81
GGC TGA GTC TCT GCA GGG CTC CGG GGA GCA CCC GAT CAT CAC CAT GTA CGA ACT GAA TAA
gly GPA val ser ala gly leu arg gly ala ala asp his his his val arg thr gle OCH
303/101
GTC CCC CCC GGG CGA CTT CCA GAC ATT TGT TGT GGT TTC GGT TGA GGC CGA GGC GAG GCT
val pro pro ala arg leu pro asp ile cys cys gly phe gly GPA gly arg gly glu ala
363/121
CAT TTC GCA GCA AGC GGT CTC CGG GTC GCA GCA TCG TGG CGG CGA TCG CGG CGC ACT CGT
his phe ala ala ser gly leu arg val ala ala ser leu arg arg ser arg arg ser arg
423/141
CGG ACG AGT CGT CGT CAA CGA CCA CGA TC
arg thr ser arg arg gln arg pro arg

SEQ ID N° 27C

FIGURE 27C

NRTGTATTTPRLIAVLIALALPQAAVALIAEPASATQASDECAASEVAR
TVAGSVAKSMGVDLDSPETHQVMTAVLQQCVGPGSVASLRASFANPK
VASDLMLRQPLTDLSTNCLPLISDLQALIGLMQAVGQARR

SEQ ID N° 28

FIGURE 28

GTGGGCAAGC	AGCTAGCCGC	GGTGGCCGCG	CTGGTGGGTC	CGTGCATGCT	CGCAGCGGGA	60
TGCACCAAGC	TGCTCGACGG	GACCGGCGTG	GGTGGCGACA	AATCGGACCC	ACTGCATCAG	120
GATCGGATAC	CGGTTTCAGC	GCTTGAAGGG	CTGGTTCTCG	ACTTGAAGLA	GATCAATGCC	180
CGCGTGGGTC	CGACATCGAT	GAAGGTGTGG	TTCACGGCCA	AGCAATATGG	GGATCGGAGC	240
AAGAGCGTGG	CGACACAGAA	TTGCTTGGGT	ATCGACGGTC	CAGCAGAGGA	AAAGCTTTAT	300
CGCGGACCGG	GGTGGACCGG	TATGGCGCGG	CAAGGGGTGG	ATGACAGCAT	CGATGACTCC	360
AAGAAACCGG	ACCACTACCG	CATTCAAGGG	GTCTGTGAGT	TCTCGAGCGG	ACATGATGCG	420
GAGGAGTTCT	ACAGTCTCTT	GGTGAAGAGC	TGGACGAGCT	GGTGGAGCGG	CGGGTTTCTC	480
GAAGTACCGC	CGAGACAGGA	CGAGCGCCGC	TGGACTGTGG	CTGAGGTTGT	CAACGACAAO	540
GGCATGCTCA	GTAGCTCGCA	GGTTCAGGAA	GGGCGGAGCG	GATGAGCTTG	CCAGCGTGCC	600
CTGACTGGCG	GGACACAGCT	CAGTATCGAC	ATTGTGAGCT	GGCGGTATAG	CGAACCGGAT	660
TTGGTGGCGA	TTGGATCGCG	TACCAAAATC	GGGCGCAAGC	TTGCTAAGCA	GTAG	714

SEQ ID N° 29

FEUILLE DE REMPLACEMENT (REGLE 26)

95/185

MGKQLAALAAALVACMLAAGCTNNVGGTAAVADNKGFLHQDPIPVFTSALEGLLLDLSQINAAALGRTS
 MKVWENAXAMWMSKSVADHHCIAIDGPAQEKVYAGTGPIWTAMRQQLDDSIPOSKARDHYAIQAVV
 GFPTAHDAEEFYSSSVQSWSSCSNRRFEVETPTTSGQDDAAWTAVADVYVNDGMLSSSVQVQEGGQGWTCQ
 RALTARNNVITIDIVTCAYSQPDLVFTATGIANQIAAKVAKQ

SEQ ID N° 30

FIGURE 30

1/1	31/11
AGG CGA ATA CCC GCG AGG GCA GCG CGA CCG	CGG CCG TGC CCG CCG CGT GCG TGC TGA ACA
arg arg ile pro ala arg ala ala arg arg	arg pro cys arg arg arg gly cys opa thr
61/21	91/31
ACA CAT CCC AGC CCG GCA CCG TTC CCG TAT	GGG GCA GGA TAA ACG ACC CCA ACA GCA CGA
thr his pro ser arg ala arg phe arg tyr	ala ala gly GCH thr thr pro thr ala arg
121/41	151/51
ACA CCA GGA TTG CGA CAA CCA AAG CCG TCG	CGC CTG GCT CGA TTT CCG CCG CAA CCG GCG
thr pro gly leu arg gln pro lys pro ser	arg leu ala arg phe arg ala gln arg gly
181/61	211/71
GTT CTG CCG CCT CGA TGT CAG CCG CGA GGG	CCT CGA GAT C
val leu pro pro arg ser gln arg gly gly	arg arg asp

SEQ ID N° 31A

FIGURE 31A

1/1	31/11
GGC GGA TAC CCG CGA GCG CAG CCG GAG GGC	GGC CCT GCC GGC GCG GTG GCT GCT GAA CAA
gly glu tyr pro arg gly gln arg asp gly	gly pro ala gly ala val ala ala glu gln
61/21	91/31
CAC ATC CCA GTC CGC CAC GCT TCC GGT ATG	CGG CAG GAT AAA CGA CCC CAA CAG CAC GAA
his ile pro ala ala his ala ser gly met	arg gln asp lys arg pro gln gln his glu
121/41	151/51
CAC CAG GAT TGC GAC AAC CAA AGC CCT CCG	GGC TGG CTG GAT TTC GCG CCG AAC CCG GCG
his gln asp cys asp asn gln ser pro arg	ala trp leu asp phe ala arg asn ala ala
181/61	211/71
TTC TGC CCG CTC GAT CTC AGC GCG GAG GCG	GTC GAG ATC
phe cys arg leu asp leu ser ala glu gly	val glu ile

SEQ ID N° 31B

FIGURE 31B

96/185

1/1
 GCG AAT ACC CGC GAG GGC AGC GCG AGG GCG GGC CTG CCG GCC TGG CTG CTG AAC AAC
 ala asn thr arg glu gly ser ala thr ala ala leu pro ala pro trp leu leu asn asn
 51/23
 ACA TCC CAG CGC GGC AGC CTT CCG GTA TGC GGC AGG ATA AAC GAC GCC AAC ACC ACC AAC
 thr ser gln pro arg thr leu pro val cys gly arg ile asn asp pro asn ser thr asn
 121/41
 ACC AGG ATT GCG ACA ACC AAA GGC CTC GCG CTT GGC TCG ATT TCG GCG GCA AGC CGG CGT
 thr arg ile ala thr thr lys ala leu ala pro gly ser ile ser arg ala thr arg arg
 181/61
 TCT GCG GGC TCG ATC TGA GCG CAG AGG GCG TCG AGA TC
 ser ala ala ser ile ser ala arg arg ala ser arg

SEQ ID N° 31C

FIGURE 31C

ORF d'après Cole et al. (Nature 353:537-544) et contenant seq1A

1/1
 tas acg acc cca aca gca cga cca cga gga tgg cga cca aag ccc ccc ccc ccc ccc
 och thr thr pro thr ala arg thr pro gly leu arg gln pro lys pro ser arg leu ala
 41/21
 cga ttt cga ggc caa cgc ggc gtt ctt cgc cct cga tct cag cgc gga gga cgt cga gat
 arg phe arg ala gln arg gly val leu pro pro arg ser gln arg gly gly arg arg asp
 121/41
 ccc cgg cgt cgt gtt cgt ggc tca tca tca tca tca tca tca tca tca tca tca tca tca
 pro arg arg arg val arg gly ser ser ser ala ser ser gly leu gly arg ala asp arg
 181/61
 cag ccc gac ccc agg cat gcc cag gcc gac ggc ggc ccc cgg ctc ccc ggc ggc gtc cgc
 gln pro asp pro arg his ala gln ala asp gly ala pro arg leu pro gly gly val arg
 241/81
 gcc gcc gcc gcc ggt gcc gcc ggt cag gcc gcc gcc gcc gcc gcc gcc gcc gcc gcc gcc
 val ala gly ala gly ala ala val gly gln asp ala gly val gly asp gln val val arg
 301/101
 cgc cgc ttc ggt gac ctt cgt ggt gat gcc gtc gcc ggc arg cag cgc cgc ctc gcc gcc
 arg arg phe gly asp leu arg gly asp asp val ala gly thr his ala arg leu ala gly
 361/121
 ggt gaa tgg ccc cag gcc ccc gcc gcc gcc gcc gcc gcc gcc gcc gcc gcc gcc gcc gcc
 gly glu val his gln ala pro val ala arg pro pro ala his ala arg arg asp gly val
 421/141
 ctt gcc ccc ttc ccc ggt gcc cag cag cag ctc cag gcc ctc ccc gac cag gcc gcc gtc
 leu ala pro phe pro gly gly his gln his leu asp gly leu pro asp gln gly ala val
 481/161
 gcc ttc cag cgc gat ttg ctc ctc cag cgc gcc gcc gcc gcc gcc gcc gcc gcc gcc gcc
 gly phe gln arg asp leu leu leu gln arg asp gln ala phe ile ala phe leu his asp
 541/181
 gcc ttt cgc cag ctc ccc gcc gcc gcc gcc gcc gcc gcc gcc gcc gcc gcc gcc gcc gcc
 gly phe arg gln leu ser val glu leu arg gly arg cys pro gly pro leu gly val leu
 601/201
 gaa ggt asa tgc gcc gcc gcc gcc gcc gcc gcc gcc gcc gcc gcc gcc gcc gcc gcc gcc
 glu gly lys cys gly arg glu ala gly pro ala his his val glu arg gly arg glu val
 661/221
 ctc ttc ggt ctc gcc gcc gcc gcc gcc gcc gcc gcc gcc gcc gcc gcc gcc gcc gcc gcc
 leu phe gly leu pro gly glu thr asp asp gln ile gly gly asn arg gly met arg asp
 721/241
 gcc cgc cgc gcc gcc gcc gcc gcc gcc gcc gcc gcc gcc gcc gcc gcc gcc gcc gcc gcc
 gly arg pro his ala leu asp asp ala glu val ala leu gly thr ile gly pro pro his
 781/261
 cgc gcc cag gat ttc gcc gcc gcc gcc gcc gcc gcc gcc gcc gcc gcc gcc gcc gcc gcc
 arg ala gln asp pro val gly ser gly leu asp

SEQ ID N° 31F

FEUILLE DE REMPLACEMENT (REGLE 26)

97/185

```

1/1                               31/11
aga ctg gtg tac acg gag aac aag ctg aac tgg gaa ttc tcc ttc gcc ggc cct aag tgt
arg leu val tyr thr glu thr lys leu asn ser ala phe ser phe gly gly pro lys cys
61/21                               91/31
cta gtg aag gtc att cag aaa atg tgg ggc ttg agc atc aac cgg ttc atc gcc att gac
leu val lys val ile gln lys leu ser gly leu ser ile asn arg phe ile ala ile asp
121/41                               131/51
ttc gtc ggt ttc gcc cgg atg gtc gag gcc ctc gcc gcc gtc gag gta tgc agc acc acc
phe val gly phe ala arg met val glu ala leu gly gly val glu val cys ser thr thr
181/61                               211/71
cgg ctg cgg gac tac gaa ctg gcc acg gtg ctg gag ccc gcc gga gcc cag gtc att gac
pro leu arg asp tyr glu leu gly thr val leu glu his ala gly arg gln val ile asp
241/81                               271/91
ggg cgg acc cgg ctg aac tat gty cgc gct cgc cag gtc acc acc gag agc aat gcc gac
gly pro thr ala leu asn tyr val arg ala arg gln val thr thr glu ser asn gly asp
301/101                               331/131
tac ggg cgc atc aac cgc cag cag ttg ttt ttg tgg tgg ctg ctg cgt tgg atg atc
tyr gly arg ile lys arg gln gln leu phe leu ser ser leu leu arg ser met ile

```

SEQ ID N° 32A

FIGURE 32A

```

1/1                               31/11
gac tgg tgt aca cgg aga cca cgc tga aat cgg cat tct cct tgg gcc gcc ala agt gac
asp trp cys thr arg arg pro ser opa thr arg his ser pro ser ala gly leu ser val
61/21                               91/31
tag tga agg tca ttc aca aac tgt cgg gct tgc gca cca acc gcc tca tgg aga ttg aat
AMB opa arg ser phe arg asn cys arg ala opa ala ser thr gly ser ser arg leu thr
121/41                               151/51
tgg tgg gtt tgg cgc gga tgg tgg agg ccc tgg gcc ggg tgg agg tat gca gca cca ccc
ser ser val ser arg gly trp ser arg pro ser ala ala ser arg tyr ala ala pro pro
181/61                               211/71
cgt tgc ggg act acg aac tgg gaa cgg tgc tgg cgc acg cgg gac gcc agg tca ttg acg
arg cys gly thr thr asn trp ala arg cys trp ser thr pro asp ala arg ser leu thr
241/81                               271/91
ggc cga cgg gcc tga act atg tgc gcc ctc gcc agy tca cca cgg aga gaa atg gcc acc
gly arg pro arg opa thr met cys ala leu ala arg ser pro pro arg ala met ala thr
301/101                               331/131
acg gcc gaa tca aac gcc agc agt tgt ttt tgt cgt cgc tgc tgc gtt cga tga tc
thr gly ala ser aac ala ser ser cys phe cys arg arg cys cys val arg opa

```

SEQ ID N° 32B

FIGURE 32B

98/185

```

1/1                               31/11
act ggt gta cac gga gac caa gct gaa ctg ggc att ctg ctt cgg cgg gcc taa gtg tct
thc gly val his gly asp gln ala glu leu gly ile leu leu arg arg ala cch val ser
61/21                               91/31
agt gaa ggt cat tca gaa act gtc ggg ctt gag cat caa cgg gtt cat cgc gat tga ctt
ser glu gly his ser glu thr val gly leu glu his gln pro val his arg asp opa leu
121/41                               151/51
cgt cgg ttt cgc ggg gat ggt cga gcc cct cgg cgg cgt cga ggt atg cag cac cac gcc
arg arg phe arg ala asp gly arg gly pro arg arg arg arg gly met gln his his pro
181/61                               211/71
gtt cgg gga cta cga act ggg cac ggt gct gga gca cgc cgg acg cca ggt cat tga cgg
val ala gly leu arg thr gly his gly ala gly ala arg arg thr pro gly his opa arg
241/81                               271/91
gcc gac cgc ggt gaa cta tgt ggg cgc tgg cca ggt cac cac cga gag caa tgg cga cta
ala asp arg ala glu leu cys ala arg ser pro gly his his arg glu gln trp arg leu
301/101                               331/111
cgg cgg cat caa acg cca gca gtt gtt ttt gtc gtc gct gct ggg ttc gat gat c
arg ala his gln thr pro ala val val phe val val ala ala ala phe asp asp

```

SEQ ID N° 32C

FIGURE 32C

séquence Rv0822c prédits par Colla et al. (Nature 393:537-544) et contenant seq 32A

```

1/1                               31/11
atg agt gac gga gag agc gcc ggg cgg tgg gaa cgg ctg tcc gag tca gca ttc ccc gat
Met ser asp gly glu ser ala ala pro trp ala arg leu ser glu ser ala phe pro asp
61/21                               91/31
ggt gtt gac cga tgg atc agt gta cgg gcc gcc aca tgg gtc gaa gcc tag ggt cgg cgg
gly val asp arg trp ile thr val pro pro ala thr trp val ala ala gln gly pro arg
121/41                               151/51
gac acc cag aat gtc ggc tgt cat gcc acc gcc gcc gtt agt ggg gcc gat ctg atc gcc
asp thr gln asn val gly cys his ala thr gly ala val ser val ala asp leu ile ala
181/61                               211/71
agg ctc gcc ccc gct ttt cct gac ctg ccc acg caa cgg cat gtc gcc ccc gaa ccc gaa
arg leu gly pro ala phe pro asp leu pro thr his arg his val ala pro glu pro glu
241/81                               271/91
cca tcc gcc cgc ggc cgg aag gtc tcc gac gcc gcc gac gcc dag cag gac acc gag gct
pro ser gly arg gly pro lys val his asp asp ala asp asp gln gln asp thr glu ala
301/101                               331/111
atc gcc atc cgg gcc cac ccy ctc gag ttc ctg tgg gtt ccc gac ctc cgg gcc gcc
ile ala ile pro ala his ser leu glu phe leu ser glu leu pro asp leu arg ala ala
361/121                               391/131
aac tat cgg cgc gcc gac caa gcc cgc cgt gaa ccc gag cta ccc gcc aag cag cta acc
asn tyr pro arg ala asp his ala arg arg glu pro glu leu pro gly lys gln leu thr
421/141                               451/151
gaa tgg gct cga gta cgg cca ttg cgg atc cgc cga cgg tcc gcc gcc gcc gcc aag cca
gly ser ala arg val arg pro leu arg ile arg arg thr ser pro ala pro ala lys pro
481/161                               511/171
ggc cgg aac tcc gcc cgg gcc cgg atg ggc ctg gcc ggc cgc tgg ttg ggc gct ctg ctt
ala pro asn ser gly arg arg pro met val leu ala ala arg ser leu ala ala leu phe
541/181                               571/191
gcc ggt ctg ggt ttg cgg ctg acc ggc ggg gca tgg cag tgg agc gcc ttg aag aac agc
ala ala leu ala leu ala leu thr gly gly ala trp gln trp ser ala ser lys asn ser
601/201                               631/211
cgg ctg aac atg gta agc ggc ccc gac cgg cat tgg gcc gac atc gtc aac gcc agc ggg
arg leu asn met val ser ala leu asp pro his ser gly asp ile val asn pro ser gly

```

SEQ ID N° 32D

99/185

661/221
cag car ggc gac gag aac ttc ctg ctc gtc
gln his gly asp glu asn phe leu leu val
721/241
aet atc ggc gcc ggc gac gcc gag gac gcc
asn ile gly ala gly asp ala glu asp ala
781/261
gcc aac att ctg gcc ago cgc gag cgc gtc
val asn ile pro ala ser arg glu arg val
841/281
acc act cca act caa tgc gag gcc tgg aac
ile thr pro ile gln cys glu ala ttp asn
901/301
gac gag aag acg gga acg atg ggt ccc aga
asp glu lys thr gly thr met gly pro arg
961/321
gca ttc tcc ttc ggc ggc cct aag tgt cta
ala phe ser phe gly gly pro lys cys leu
1021/341
agc atc aac cgg ttc atc gcc att gac ttc
ser ile asn arg phe ile ala ile asp phe
1081/361
ggc gcc gtc gac gta tgc agc acc acc cgc
gly gly val glu val cys ser thr thr pro
1141/381
gag cag gcc gga cgc cag gtc att gac ggc
glu his ala gly arg gla val ile asp gly
1201/401
cag gtc acc acc gag aga aat ggc gac tac
gln val thr thr glu ser asn gly asp tyr
1261/421
tgg tgg ctg ctg cgt tgg atg atc tgg acg
ser ser leu leu arg ser met ile ser thr
1321/441
aac gtc gtc aac atg ttc atc ggt aac ago
asn val val asn met phe ile gly asn ser
1381/461
gtc gaa ctc ggt cga tgg tgg cag tat atg
val glu leu gly arg aar leu gln his met
1441/481
ccg acc ggt aca acc gac cag aac ggc gac
pro thr gly ile thr asp gln asn gly asp
1501/501
cgt ttc acc gcc atc atc gag gac gat cgc
leu phe thr ala ile ile asp asp asp pro
1561/521
cgt ctg gcc aac acg ccg tgg acc ccg ccg
arg leu gly ser thr pro ser thr pro pro
1621/541
ctg acc aac gag att cag caa cag cag gtt
leu thr asn glu ile gln his gln gln val
1681/561
cag gcc tct aac tgg acc ggc cag gcc ggt
gln val ser asn ser thr gly gln ala gly
1741/581
cgc aac gcc ttc aac ggc acc ggt cgc gac
arg asn gly phe asn val met ala pro asp
1801/601
gtg ttt ttt tgg ccc gcc aac gaa cag gct
val phe phe ser pro gly asp glu gln ala
1861/621
tca aag atc gag cgc gtc acc ggc atc ggc
ser lys ile glu asp val thr gly ile gly
691/231
ggc atg gac tct cgt gcc ggc ggc aac gcc
gly met asp ser arg ala gly ala asn ala
751/251
ggc gcc gca cgt tgg gac acc gtc atg ctg
gly gly ala arg ser asp thr val met leu
811/271
gta cgc gtc tgg ttc ccc gcc gac ctg ggc
val ala val val ser phe pro arg asp leu ala
871/291
ccc gag acc ggc aag taa gga ccc act tac
pro glu thr gly lys tyr gly pro ile tyr
931/311
ctg gtc tac acg gag acc aag ctg aac tgg
leu val tyr thr glu thr lys leu asn ser
991/331
gtg aag gtc att cag aac ctg tgg ggc tgg
val lys val ile gln lys leu ser gly leu
1051/351
gtc ggt ttc ggc cgc atg gtc gag gcc ctg
val gly phe ala arg met val glu ala leu
1111/371
tgg cgc gac tac gaa ctg gcc acg gtc ctg
leu arg asp tyr gln lys leu ser gly leu
1171/391
ccg acc gcc ctg aac tat gtc cgc gct cgc
pro thr ala leu asn tyr val arg ala arg
1231/411
ggc cgc atc aac cgc cag cag ctg ttt ttt
gly arg ile lys arg gln gln leu phe leu
1291/431
gac acc tgg ttc aac ctc agc agc gtc aac
acc acc tgg ttc aac ctc agc agc gtc aac
1351/451
tac gtc gcc acc gtc aag acc aac gcc ctg
tyr val asp asn val lys thr lys asp leu
1411/471
ggc gcc ggc cag gtc acc ttc gtc acc gtc
ala ala gly his val thr phe val thr val
1471/491
gag ccc cgc ggt acc tac gcc acc atg gag
gcu pro pro arg thr acc asp met lys ala
1531/511
ctg ccc ctg gaa acc gat cac aac gcc cag
leu pro leu glu asn asp his asn ala gln
1591/531
thr thr ttc lys lys ala pro gln ala gly
1651/551
acc acc acc tgg cca aac gag gtc acc gtc
acc acc acc tgg cca aac gag gtc acc gtc
1711/571
acc gcc acc acc gcc acc acc cag ctc aag
leu ala thr thr thr thr thr thr thr thr
1771/591
gac tac cgc ggt tgg ctg ctg gcc acc acc
asp tyr pro ser ser leu leu ala thr thr
1831/611
gac tac cgc ggt tgg ctg ctg gcc acc acc
asp tyr pro ser ser leu leu ala thr thr
1891/631
caa ctg gtc cag gtc gtc ggc gcc aac gac
gln leu val gln val val leu gly gln asp

SEQ ID N° 32D (suite 1)

FEUILLE DE REMPLACEMENT (RÈGLE 26)

100/185

1921/641
 ttc agc ggc gty cgc gct ccc ctg cag agt ggc tcc acc gtc agc gtc cag ata agc cgc
 phe ser ala val arg ala pro leu pro ser gly ser thr val ser val gln ile ser arg
 1961/661
 aac tcc tcc agc oca cag acc aag ctg ccc gag gac ctg aag gtc acc aac gcc gcc gac
 asn ser ser ser pro pro thr lys leu pro glu asp leu thr val thr asn ala ala asp
 2011/681
 acc acc tgc gag tag
 thr thr cys glu AMS

1951/651

SEQ ID N° 32D (suite 2)

FIGURE 32D (suite 2)

ORF d'après Cole et al. (Nature 393:537-544) et contenant R0822c

1/1
 tag gac atg agt gac ggc gag agc gcc ggc cgc tgg gca cgc ctg tcc gag tca gca ttc
 AMS asp met ser asp gly glu ser ala ala pro trp ala arg leu ser gln ser ala phe
 61/21
 ccc gat ggt gtt gac cga tgg atc acg gta cgc ccc gcc acc tgg gty gca gcc cag ggt
 pro asp gly val asp arg trp ile thr val pro pro ala thr trp val ala ala gln gly
 121/41
 cgc cgc gac acc cag aat gtc gcc tgt aat gcc acc gcc gcc gtt aat gtc gcc gat cgc
 pro arg asp thr gln asn val gly cys his ala thr gly ala val ser val ala asp leu
 181/61
 atc gcc agg ctg gcc ccc gcc ttr ccc gac ccc ccc acg ccc acc gcc aat gtc gcc ccc gaa
 ile ala arg leu gly pro ala phe pro asp lea pro thr his arg his val ala pro glu
 241/81
 ccc gag cca tcc gcc cgc gcc cgc aag gtc ccc gcc gcc gcc gcc gcc gcc gcc gcc gcc
 pro glu pro ser gly arg gly pro lys val his asp asp ala asp asp gln gln asp thr
 301/101
 gag gct atc gcc atc tgg gcc ccc tgg ctc gag ttc ccc tgg gag att acc gcc ctc cgc
 glu ala ile ala ile pro ala his ser leu gln phe leu ser glu leu pro asp leu arg
 361/121
 gcc gcc aac tat cgc cgc gcc gcc gcc gcc gcc gcc gcc gcc gcc gcc gcc gcc gcc gcc
 ala ala asn tyr pro arg ala asp his ala arg atg glu pro glu leu pro gly lys gln
 421/141
 cta acc gga tgg gct cga gtc cgc coa tgg cgc atc cgc cga acc tgg ccc gcc gcc gcc
 leu thr gly ser ala arg val arg pro leu arg ile arg arg thr ser pro ala pro ala
 481/161
 aag cca gcc cgc acc acc tcc gcc cgc cgc cgc arg gty ctc gcc gcc gcc cgc cgc gcc gcc
 lys pro ala pro asn ser gly arg arg pro met val leu ala ala arg ser leu ala ala
 541/181
 ctc ttt gcc gct ctg gcc tgg ggc tgg acc gcc gcc gcc gaa tgg cag tgg gcc gcc gcc gcc
 leu phe ala ala leu ala leu ala leu thr gly gly ala trp gln trp ser ala ser lys
 601/201
 aac agc cgc ctg aac atg gta agt agc gta gcc ccc acc tgg gcc gcc ctc gtc acc acc
 asn ser arg leu asn ser val ser ala leu asp pro his ser gly asp ile val asn pro
 661/221
 agc gcc cag cag gcc gcc gag aac ttr ttt ctc gtc ggt arg gcc tat cgt gcc gcc gcc
 ser gly gln his gly asp glu asn phe leu leu val gly met asp ser arg ala gly ala
 721/241
 aac gcc aat atc gcc gcc gtc gcc gcc gcc gcc gcc gcc gcc gcc gcc gcc gcc gcc gcc
 asn ala asn ile gly ala gly asp ala glu asp ala gly gly ala arg ser asp thr val
 781/261
 atg ctc gcc aac att cgc gcc acc gcc gag cgc gcc gcc gcc gcc gcc gcc gcc gcc gcc
 met leu val asn ile pro ala ser arg glu arg val val ala val acc phe pro arg asp

SEQ ID N° 32F

FEUILLE DE REMPLACEMENT (REGLE 26)

FIGURE 32F

101/185

41/781
ctg ggc atc att cca atc caa tgc gag ggc tgg aac ccc gag acc ggt aag tac gga acc
leu ala ile thr pro ile gln cys glu ala thr asn pro glu thr gly lys tyr gly pro
901/301
atc tac gac gag gag aag acg gga acg atg ggt ccc acc aga ctg atg tac acg gag acc aag ctg
ile tyr asp gln lys thr gly thr met gly pro arg leu val tyr thr glu thr lys leu
981/311
aac tgc gga ttc tcc ttc ggc ggc ccc lya tgc tta gtc aag gtc att gag aaa cag kgc
asn ser ala phe ser phe gly ggc pro lya cys leu val lys val ile gln lys leu ser
1021/341
gcy ttg agc atc aac cgc ttc atc ggc att gac ttc gtc gtc ttc ggc cgc atg gtc gag
gly tleu ser ile asn arg phe ile ala ile asp phe val gly phe ala arg met val glu
1091/361
acc ctg ggc ggc gtc gac gta tgc agc acc acc ccc ctg ctg gac tac gaa ctg ggc acc
ala tleu gly gly val glu val cys ser thr thr pro leu cgc asp tyr gly gly gly thr
1141/391
gcy ctg gag cac gcc gga cgc cag gtc att gac ggc ccc acc ggc ctg aac tac gtc gtc
val leu gls his ala gly arg gln val ile asp gly pro thr ala leu asn tyr val arg
1291/401
ctg cgc cag gtc acc acc gag agc aac ggc gac tac ggc cgc acc aac cgc cag ctg
ala arg gln val thr thr glu ser asn gly asp tyr gly arg ile lys acg gln gln leu
1241/421
tct ttg tgc tgg ctg cgc cgt tgc arg atc tgc agc gac acc tgc ttc aac ctg acc agc
phe leu ser ser leu leu arg ser met ile ser thr asp thr leu phe asn leu ser arg
1321/441
ctc aac aac gtc att acc aac atg ttc att ggt aac agc tac gty gac aac gtc aac acc aac
leu asn aac val val aac met phe ile gly asn ser tyr val asp aac val lys thr lys
1391/461
gac ctg gtc gaa ctg cgt cga tgc tgc cag tat atg ggc ggc ggc ggc gac gtc acg ttc gtc
asp leu val glu leu gly arg ser leu gln his met ala ala gly his val thr phe val
1441/491
acc gct cgc acc ggt ala acc gac cag aac ggc gac gag ccc cgc arg acc tcc gag acc
thr val pro thr gly ile thr asp gln asn gly asp glu pro pro arg thr ser asp met
1501/501
aag ggc att ttc acc gcc atc atc gac gac gac ggc ctg ccc ggc gaa aac gat cac aac
lys ala leu phe thr ala ile ile asp asp asp pro leu pro leu glu asg asp his asn
1561/521
gac cag cgt ctg ggc aac acg cgc acc ccc cgc ccc acc acc aac aag aag ggc cgc cag
ala gln arg leu gly asn thr pro ser thr pro thr thr thr lys lys ala pro gln
1621/541
gcy ggt cgc acc aac gac att cag cag cag gac gtc acc acg acc tgc cca aaa gac gtc
ala gly leu thr asn glu ile gln his gln gln val thr thr thr ser pro lys glu val
1681/561
aca ggt cag gtc tac aac xcg acc ggc cgc ggc ggc ttg ggc acc acc gac acc gac gac
thr val gln val ser asn ser thr gly gln ala gly leu ala thr thr ala thr asp gln
1741/581
ctc aag cgc aac gcc ttc aac ggc atc aac ggc atg gct cgc gac gac cgc acc gac gtc ggc
leu lys arg asn gly phe asn val met ala pro asp asp tyr pro ser ser leu leu ala
1801/601
aac aca gtc ttc ttc tgc ccc ggc acc gaa cag gct gcc gcc acc aac ggc gcc ggc ttc
thr thr val phe phe ser pro gly asn gln gln ala ala thr val ala val phe
1961/621
gcy cag tca aac atc gac ggc ggc acc ggc att ggc gaa cty gtc cag gty gty gty gty
gly gln ser lys ile gln gly arg val thr gly ile gly gln leu val gln val val leu gly
1211/641
caa gac ttc acc gag ggc ggc gct gcc ctg cgc ggc ggc tcc acc ggc ggc ggc gac ala
gln asp phe ser ala val arg pro leu pro pro ser gly thr val ser val gly gln ile
1981/661
acc ggc aac tcc tcc acc cca ccc acc aag ctg ccc gag gac ctg aag gtc acc acc ggc
ser atg asu ser ser ser pro pro thr lys leu pro glu asp leu thr val thr asn ala
2041/691
gac gac acc acc ggc gag tgc
gla acc thr thr cys glu aac
2241/751

SSQ ID 32F (suite 1)

FIGURE 32* (cont'd.)
FEUILLE DE REMPLACEMENT (REGLE 26)

102/105

1/1 31/11
 CCG CAC CTC TGC CAT GGT CCA TCT ACG GTA TCT CGG ACA AGG GCA GCG TGG ATC CCT CGA
 arg his leu cys his gly pro ser thr val ser ala thr arg ala ala ser ile pro arg
 61/21 91/31
 CAT GCA GAG TCG GTG TTC GGT TCA CCG GAA CTA GCG GCG CCT AGC CTG GAC GAG TCC CCG
 his ala glu ser val phe ala ser arg glu leu gly ala pro ser leu asp glu ser pro
 121/41 151/51
 GGC CGA CAT TCG CCC GAG GGC TTG GCC TCC ATC ACC TAA TTG TGT GCA AAA CCG TAT CTA
 gly arg his ser pro glu ala leu ala ser ile thr OCH leu cys ala lys pro tyr leu
 181/61 211/71
 ATT GAT ACG ATT GCG CAC ATG GCT ATC TGG CAT C
 ile asp thr ile ala his met ala ile trp asp

SEQ ID N° 33A

FIGURE 33A

1/1 31/11
 GTC ACC TCT GCC ATG GTC CAT CTA CCG TAT CTA CGA CAA GGG CAG GGT CGA TCC CTC GAC
 val thr ser ala met val his leu arg tyr leu arg glu gly gin arg arg ser leu asp
 61/21 91/31
 ATG CAG AGT CCG TGT TCG CTT CAC GCG AAC TAG GCG CCG CTA GCC TGG ACG AGT GGC CCG
 met glu ser arg cys ser leu his ala asn AMS ala arg leu ala trp thr ser pro arg
 121/41 151/51
 GCG GAC ATT CCG CCG AGG CCT TGG CCT CCA TCA CCT AAT TGT GTG GAA AAC GGT ATC TAA
 ala asp ile arg pro arg pro tip pro pro ser pro asn cys val glu asn arg ile OCH
 181/61 211/71
 TTG ATA CCA ITS CCG ACA TGG CTA TCT GGG ATC
 leu ile arg leu arg thr tip leu ser gly ile

SEQ ID N° 33B

FIGURE 33B

1/1 31/11
 CCG TCA CCT CCG CCA TGG TGG ATC TAG GGT ATC TGC GAC AAG GGC AGC GTC CAT CCC TGG
 pro ser pro leu pro trp ser ile tyr gly ile cys asp lys gly ser val asp pro ser
 61/21 91/31
 ACA TSC AGA GTC GGT GTT CCG TTC ACG CGA ACT AGG CCG GGC TAG CTT GGA CGA CTC CCG
 thr cys arg val gly val arg phe thr arg thr arg arg ala AMS pro gly asp val pro
 121/41 151/51
 GGG CCG ACA TTC GCG CGA GGC CTT GGC CTC CAT CAC CTA ATT GTG TGC AAA ACC GTA TCT
 gly pro thr phe ala arg gly leu gly leu his his leu ile val cys lys thr val ser
 181/61 211/71
 AAT TGA TAC GAT TGC GCA CAT GGC TAT CTG GGA TC
 asn ope tyr asp cys ala his gly tyr leu gly

SEQ ID N° 33C

FIGURE 33C

FEUILLE DE REMPLACEMENT (REGLE 26)

103/185

séquence Kv1D4 prédite par Cole et al. (Nature 393:537-544) et contenant seq33A

```

1/1                               31/11
ttg tgt gca asa cag tat cta att gat acg att ggg cac atg gct atc tgg gat cgc ctc
leu cys ala lys pro tyr leu ile asp thr ile ala his met ala ile trp asp arg leu
61/21                               91/31
gtc gag gtt ggc gcc gag caa cat ggc tac gtc acg act cgc gat ggc cga gac atc gcc
val glu val ala ala glu gln his gly tyr val thr thr arg asp ala arg asp ile gly
121/41                               151/51
gtc gac cct gtg cag ctc cgc ctc cta ggc ggg cgc gga cgt ctc gag cgt gtc gcc cga
val asp pro val gln leu arg leu leu ala gly acg gly arg leu glu arg val gly arg
181/61                               211/71
ggt gtc tac cgg gtg ccc gtg ctc cgc cgt ggt gag cac gac gat ctc gca gcc gca gtc
gly val tyr arg val pro val leu pro arg gly glu his asp asp leu ala ala ala val
241/81                               271/91
tcg tgg acc tly ggg cgt gcc gtt atc tgc cat gag tgc gcc ttg ggc ctt cat gcc ctc
ser trp thr leu gly arg gly val ile ser his glu ser ala leu ala leu his ala leu
301/101                               331/111
gct gac gtg aac cag tgc cgc atc cat ctc aac gtc cgc cga aac aac cat cgc cgc ggc
ala asp val asn pro ser arg ile his leu thr val pro arg asp asn his pro arg ala
361/121                               391/131
gcc ggc gcc gag cgc tac cga gtt cac cgc cgc gac ctc aag gca gcc cac gtc act tgc
ala gly gly glu leu tyr arg val his arg arg asp leu gln ala ala his val thr ser
421/141                               451/151
gtc gac gga ata ccc gtc aag aag gtc ggc cgc aac atc aaa gac tgc gtg aag acg gcc
val asp gly ile pro val thr thr val ala arg thr ile lys asp cys val lys thr gly
481/161                               511/171
acg gat cct cat cag ctt cgg gcc gcc atc gac cga gcc gaa gcc gag gcc aag ctt cgt
thr asp pro tyr gln leu arg ala ala ile glu arg ala glu ala glu gly thr leu arg
541/181                               571/191
cgt ggc tca gaa gct gag cta cgc gct gcc ctc gat gag acc act gcc gga tta cgc gct
arg gly ser ala ala glu leu arg ala ala leu asp glu thr thr ala gly leu arg ala
601/201
cgc cgc aag cga gca tgc gcc tga
arg pro lys arg ala ser ala opa

```

SEQ ID N° 33D

FIGURE 33D

104/185

ORF d'après Cole et al. (Nature 393:537-544) et contenant Rv1944

```

1/1                               31/11
taa ttg tgc gaa aaa cgg tat cta att gat aag att ggc cac atg gct atc tgg gaa cgc
OCH leu cys ala lys pro tyr leu ile asp thr ile ala his met ala ile trp asp arg
61/21                               91/31
ccc gtc gag gtt gcc gcc gag caa cat ggc tac gtc acg acc agc gat ggg cga gac aco
leu val glu val ala ala glu gln his gly tyr val thr thr arg asp ala arg asp ile
121/41                               151/51
ggc gtc gac cct gtg cag ctc cgc ctc cta ggc ggg agc gga agt ctt gag cgt gtc ggc
gly val asp pro val gln leu arg leu leu ala gly arg gly arg leu glu arg val gly
181/61                               211/71
cga ggt gtg tac cgg gtg ccc gtg ctg cgg cgt ggt gag cac gac gat ctc gaa gcc gaa
arg gly val tyr arg val pro val leu pro arg gly glu his asp asp leu ala ala ala
241/91                               271/91
gtg tgc tgg act ttg ggg cgt ggc gtt atc tgc cat gag tgc gcc ttg ggc ctt cat gcc
val ser tip thr leu gly arg gly val ile ser his glu ser ala leu ala leu his ala
301/101                               331/111
ctc gct gac gtg aac cgg tcc cgc atc cat ctc aac gtc cgg cgc aac aac cat cgg cgt
leu ala asp val asn pro ser arg ile his leu thr val pro arg asn asn his pro arg
361/121                               391/131
ggc gcc ggg gcc gag ctg tac cga gtt ccc cgc cgc gac ctc cag gaa gcc cac gtc act
ala ala gly gly glu leu tyr arg val his arg asp leu gln ala ala his val thr
421/141                               451/151
tcc gtc gac gga ata ccc gtc aag aag gtt ggc cgc acc atc aac gac tgc gtg aag acg
ser val asp gly ile pro val thr thr val ala arg thr ile lys asp cys val lys thr
481/161                               511/171
ggc aag gat cct tat cag ctt cgg gcc ggc atc gag cga gcc gaa gcc ggc ggc aag ctt
gly thr asp pro tyr gln leu arg ala ala ile glu arg ala glu ala glu gly thr leu
541/181                               571/191
cgt cgt ggg taa gaa get gag cta cgt gct ggc ctc gat gag acc act gac gga tta cgc
arg arg gly ser ala ala glu leu arg ala ala leu asp glu thr thr ala gly leu arg
601/201
gct cgg ccg aag cga gaa tgg cgg tga
ala arg pro lys arg ala ser ala OPA

```

SEQ ID N° 33F

FIGURE 33F

```

1/1                               31/11
ATC GAA CTT GCT GGG CTT GCG CTT TCG ATT CGA CCG CTA GGC CAC CCG TCG CTG CCG GCA
ile gln pro ala gly pro ala pro ser asn arg arg pro gly his arg ser leu pro ala
61/31                               91/31
ACA ACA CTT GGA ATG GGG ACC TTT TCG CTG TTG CTG GTA ACC GGG ACA ACC GGC ACC ACC
thr thr pro gly met gly thr phe ser val leu leu val thr gly thr thr gly thr thr
121/41                               151/51
CCT GCG TCG AGA CGT ATC GCG GCA GAG TTG GCG CTG TCG TTT CTG ACA ATT ACC CCT GGC
pro arg ser arg arg ile ala ala ala leu ala ile ser leu leu thr ile thr ala gly
181/61                               211/71
cgc cgc ATA TTT GCC GCG CTG CCG CCG GGC GGA TC
arg arg ile phe ala ala leu pro arg ala gly

```

SEQ ID N° 34A

FIGURE 34A

FEUILLE DE REMPLACEMENT (REGLE 26)

105/185

1/1 31/11
 TCC AAC CTG CTG GGC CTG CCG CTT CGA ATC GAC GGC CAG GGC ACC GCT CSC TGC CGG CAA
 ser asn leu leu gly leu arg leu arg ile asp gly gln ala thr ala arg cys arg gln
 61/21 91/31
 CAA CAC CTG GAA TGG GGA COT TTT CCG TGT TGC TGG TAA CCG GGA CAA CCG GCA CCA CCG
 gln his leu glu trp gly pro phe arg cys cys trp GCH pro gly gln pro ala pro arg
 121/41 151/51
 CTC GGT CGA GAC GTA TCG CCG CAG COT TGG CCC TGT COT TGC TGA CAA TTA CCG CTC GGC
 leu gly arg asp val ser arg gln arg trp pro cys arg cys CPA gln leu pro leu ala
 181/61 211/71
 GCC GCA TAT TTG CCG CCG TGC CCG GCG CCG GAT C
 ala ala tyr leu pro arg cys arg gly pro asp

SEQ ID N° 34B

FIGURE 34B

1/1 31/11
 GAT CCA ACC TGC TGG GGC TGC GCC TTC GAA TCG ACG GGC ACG CGA CCG CTC GCT GCC GGC
 asp pro thr cys trp ala cys ala phe glu ser thr ala arg pro pro leu ala ala gly
 61/21 91/31
 AAC AAC ACC TGG AAT GCG GAC ATT TTC GGT GTT GCT GGT AAC CCG GAC AAC CCG CAC CAC
 asn asn thr trp asn gly asp leu phe gly val ala gly asn arg asp asn arg his his
 121/41 151/51
 GCC TCG CTC GAG ACG TAT CSC GGC AGC GTT GGC COT CTC GTT GCT GAC AAT TAC CCG TGG
 ala ser val glu thr tyr arg gly ser val gly pro val val ala asp asn tyr arg cyp
 181/61 211/71
 CCG CCG CAT ATT TGC CCG GCT GCC GCG GCG CCG ATC
 pro pro his ile cys arg ala ala ala gly arg ile

SEQ ID N° 34C

FIGURE 34C

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ORF d'après Cole et al. (Nature 353:537-544) contenant seq34A

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1/1                               31/11
tag cag cag gcc cct gag gcc agg cgc gcc cgg tgc agt tgg cag cgg cgg caa tag atg
AMB pro gln gly pro ala ala arg arg gly arg cys arg asp pro arg arg gln ser met
61/21                               91/31
ttg cag cag tta caa cgc cca arg gag tct gag cgc atc gcc gag ttc gat cag ctc gcc
leu gln gln leu gln arg gln met gln ser gln arg ile val glu phe asp gln leu gly
121/41                               151/51
agg gga gac gtt gcg cag cga cgg atc caa cct gct ggg cct gcc cct tag aat cga cgg
arg gly asp val ala gln arg arg ile gln pro ala gly pro ala pro ser asn arg arg
181/61                               211/71
cca gcc ccc cgc tgg ctg ccg gaa aca aca cct gga arg ggg acc tat tgg gtg ttg ctg
pro gly his arg ser leu pro ala thr thr pro gly met gly thr phe ser val leu leu
241/81                               271/91
gta acc ggg aca acc gga acc acg cct cgg tgg aga cgt atc gcc gaa cgg ttg gcc ctg
val thr gly thr thr gly thr thr pro arg ser arg arg ile ala ala leu ala leu
301/101                               331/111
tgg ttg ctg aca att acc gct ggc cgc cgc ata ttt gcc gcg ctg ccg cgg gcc gga tcc
ser leu leu thr ile thr ala gly arg arg ile phe ala ala leu pro arg ala gly ser
361/121                               391/131
agg tgg acc tgc cag atc aca ccg cgc agc att tac gcc gtt cgc tgc aaa cgg cgg act
arg ser thr cys gln ile ser pro arg ser ile tyr ala val arg cys lys pro pro thr
421/141                               451/151
gcg cag gaa gcc cca ctc tct tgg cat gag tcc aat gct gcc agc tcc tgg gta gac aag
ala thr ala gly pro leu ser trp his ala ser asn ala ala thr ser ser val asp lys
481/161                               511/171
ctc aag ctt gcc ttc atg ccg cag tcc tac aca tgt agt aac aga tag
leu thr leu gly phe met pro gln ser tyr pro cys ser asn arg AMB

```

SEQ ID N° 34F

FIGURE 34F

```

1/1                               31/11
CAG TCT GTC GGC AAG GAG CGA CGC ATG CCA CTC TCC GAT CAT GAG CAG CGG ATG CTT GAC
gln ser val gly lys glu gly arg met pro leu ser asp his glu gln arg met leu asp
61/21                               91/31
CAG ATC GAG AGC GGT CTC TAC GCC GAA GAT CGC AAG TTC CCA TCG AGT GTC CGT GGC CGC
gln ile glu ser ala leu tyr ala glu asp pro lys phe ala ser ser val arg gly gly
121/41                               151/51
GCC TTC GGC GGA CGC ACC GCG CGC CGC CTC CAG GGC GCG CGC TGG TTC ATC ATC GGT
gly phe arg ala pro thr ala arg arg arg leu gln gly ala ala leu phe ile ile gly
181/61                               211/71
CTG GGC ATG TTG GTT TCC GGC CTC GCG TTC AAA GAG ACC ATG ATC GGA AAT TTC CCG ATA
leu gly met leu val ser gly val ala phe lys glu thr met ile gly ser phe pro ile
241/81                               271/91
CTC AGC GGT TTC GGT TTT GTC GTC ATG TTC GGT GGT GTC CTC TAT GGC ATC ACC GGT GGT
leu ser val phe gly phe val val met phe gly gly val val tyr ala ile thr gly pro
301/101                               331/111
CGA TTG TCC GGC ACG ATG GAT GGT GCG GGA TCG GGT GGT GGC GGT TGG CGC CAG GGT GGT
arg leu ser gly arg met asp arg gly gly ser ala ala gly ala ser arg gln arg arg
361/121                               391/131
ACC AAG GGG GCG GGC TCA TTC ACC AGC GGT ATG GAA GAT C
thr lys gly ala gly gly ser phe thr ser arg met gln asp

```

SEQ ID N° 35A

FEUILLE DE REMPLACEMENT (REGLE 26)

FIGURE 35A

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1/1                               31/11
GAG AGT CTG TCG GCA AGG AGG GAC GCA TGC CAC TCT CCG ATC ATG AGC AGC GGA TGC TTG
asp ser leu ser ala arg arg asp ala cys his ser pro ile met ser ser gly cys leu
61/21                               91/31
ACC AGA TCG AGA GCG CTC TCT ACG CCG AAG ATC ECA AGT TCG CAT CGA GTG TCC GTG GCG
thr arg ser arg ala leu ser thr pro lys ile pro ser ser his arg val ser val ala
121/41                               151/51
GGG GCT TCC GCG CAC CGA CCG CCG GCG GGC GCC TGC AGG CCG CCG GGT TGT TCA TCA TCG
gly ala ser ala his arg pro arg gly gly ala cys arg ala arg arg cys ser ser ser
181/61                               211/71
GTC TGG GGA TGT TGG TTT CCG CCG TGG CGT TCA AAG AGA CCA TGA TCG GAA GTT TCC GGA
val trp gly cys trp phe pro ala trp arg ser lys arg pro oxa ser glu val ser arg
241/81                               271/91
TAC TCA GCG TTT TCG GTT TTG TCG TGA TGT TCG GTG GTG TGG TGT ATG CCA TCA CCG GTC
tyr ser ala phe ser val leu ser oxa cys ser val val trp cys met pro ser pro val
301/101                               331/111
CTC GGT TGT CCG GCA GGA TGG ATC GTG GCG GAT CCG CTG CTG GGG CTT CCG GCC AGC GTC
leu gly cys pro ala gly trp ile val ala asp arg leu leu gly leu arg ala ser val
361/121                               391/131
GTA CCA AGG GGG CCG GCG SCT CAT TCA CCA GCC GTA TGG AAG ATC
val pro arg gly pro gly ala his ser pro ala val trp lys ile

```

SEQ ID N° 35B

FIGURE 35B

```

1/1                               31/11
ACA GTC TGT CCG CAA GGA GGG ACC CAT GGC ACT CTC CGA TCA TGA GCA GCG GAT GCT TGA
thr val cys arg gln gly gly thr his ala thr leu arg ser oxa ala ala asp ala oxa
61/21                               91/31
CCA GAT CGA GAG CCG TCT CTA CGC CGA AGA TCC CAA GTT CCG ATC GAG TGT CCG TGG CCG
pro asp arg glu arg ser leu arg arg arg ser gln val arg ile glu cys pro trp arg
121/41                               151/51
GGG CTT CCG CCG ACC GAC CCG GCG GCG GCG GCT GCA GGG CCG GCG GTT GTT CAT CAT CCG
gly leu pro arg thr asp arg ala ala ala pro ala gly arg gly val val his his arg
181/61                               211/71
TGT GGG GAT GTT GGT TTC CCG COT GCG GTT CAA AGA GAC CAT GAT CCG AAG TTT CCG GAT
ser gly asp val gly phe arg arg gly val gln arg asp his asp arg lys phe pro asp
241/81                               271/91
ACT CAG CGY TTT CCG TTT TGT COT GAT GTT CCG TGG TGT GGT GTA TCG CAT GAC CCG TCG
thr gln arg phe arg phe cys arg asp val arg trp cys gly val cys his his arg ser
301/101                               331/111
TGG GTT GTC CCG CAG GAT GGA TGG TGG CCG ATC GCG TGC TGG GCG TTC GCG CCA GCG TCG
ser val val arg gln asp gly ser trp arg ile gly cys trp gly phe ala pro ala ser
361/121                               391/131
TAC CAA GCG GCG CCG GCG CTT ATT CAG CAG CCG TAT GGA AGA TC
tyr gln gly gly arg gly leu ile his gln pro cys gly arg

```

SEQ ID N° 35C

108/185

séquence Rv2169c prédite par Cole et al. (Nature 393:537-544) et contenant partiellement seq35A

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1/1                               31/11
atg cca ctc tcc gat cat gag cag cgg atg ctt gac cag atc gag agc gct ctc tac gcc
Met pro leu ser asp his glu gln arg met leu asp gln ile glu ser ala leu tyr ala
61/21                               91/31
gaa gat ccc aag ttc gca tgg agt gtc cgt ggc ggg ggc ttc cgc gca cag acc ggc cgg
glu asp pro lys phe ala ser ser val arg gly gly phe arg ala pro thr ala arg
121/41                               151/51
cgg cgc ctg cag gcc gcc gcc ttg ttc atc atc ggt ctg ggg atg ttg gtt tcc gcc gtc
arg arg leu gln gly ala ala leu phe ile ile gly leu gly met leu val ser gly val
181/61                               211/71
ggc ttc aaa gag acc atg atc gga agt ttc cag ala ctc agc gtt ttc ggt ttt gtc gtc
ala phe lys glu thr met ile gly ser phe pro ile leu ser val phe gly phe val val
241/81                               271/91
atg ttc ggt ggt gtc gtc tac gcc atc acc ggt cct cgg ttg tcc gcc agc atg gat cgt
met phe gly gly val val tyr ala ile thr gly pro arg leu ser gly arg met asp arg
301/101                               331/111
ggc gga tgg gct gct ggg gcc tgg cgc cag cgt cgt acc aag ggg gcc ggg gcc tca ttc
gly gly ser ala ala gly ala ser arg gln arg arg thr lys gly ala gly gly ser phe
361/121                               391/131
acc agc cgt atg gaa gat cgg ttc cgg cgc cgc ttc gac gag tac
thr ser arg met glu asp arg phe arg arg arg phe asp glu OCM

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SEQ ID N° 35D

FIGURE 35D

ORF d'après Cole et al. (Nature 393:537-544) et contenant Rv2169c

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1/1                               31/11
tga cag tct gtc gcc aag gag gga cgc atg cca ctc tcc gat cat gag cag cgg atg ctt
OFA gln ser val gly lys glu gly arg met pro leu ser arg his glu gln arg met leu
61/21                               91/31
gac cag atc gag agc gct ctc tac gcc gaa gat ccc aag ttc gca tgg agt gtc cgt ggc
asp gln ile glu ser ala leu tyr ala glu asp pro lys phe ala ser ser val arg gly
121/41                               151/51
ggg ggc ttc cgc gca cag acc gcc cgg cgg cgc ctg cag gcc gcc ggc ttg ttc atc atc
gly gly phe arg ala pro thr ala arg arg arg leu gln gly ala ala leu phe ile ile
181/61                               211/71
ggt ctg ggg atg ttg gtt tcc gcc gtc ggc ttc aaa gag acc atg atc gga agt ttc cag
gly leu gly met leu val ser gly val ala phe lys glu thr met ile gly ser phe pro
241/81                               271/91
ata ctc agc gtc ttc ggt ttt gtc gtc atg ttc ggt ggt gtc gtc tac gcc atc acc ggt
ile leu ser val phe gly phe val val met phe gly gly val val tyr ala ile thr gly
301/101                               331/111
cct cgg ttg tcc gcc agc atg gat cgt gcc ggc tgg gcc ggc ggc tcc gcc cag cgt
pro arg leu ser gly arg met asp arg gly gly ser ala ala gly ala ser arg gln arg
361/121                               391/131
cgt acc aag ggg gcc ggg gcc tca ttc acc agc tyr atg gaa gat cgg ttc cgg cgc cgc
arg thr lys gly ala gly gly ser phe thr ser arg met glu asp arg phe arg arg arg
421/141
ttc gac gag tac
phe asp glu OCM

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SEQ ID 35F

FEUILLE DE REMPLACEMENT (REGLE 26)

FIGURE 35F

109/185

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1/1                               31/11
GAC CTG GGA CGA AGA CGA CGG CAG CAG CCG CAA TCA GAT CTA CCC GGT CCT GGT CAA CGT
asp leu gly arg arg arg arg gln gln pro gln ser asp leu pro gly pro gly gln arg
61/21                               91/31
CAA TGG ACA CCC GAC TAC GGT GCG CCT GCG CCG CTC GAC AAT GCG CGG TTC CTG TTG CCC
gln trp thr pro asp tyr gly ala pro ala arg leu asp asn ala arg phe leu leu pro
121/41                               151/51
GTG GTC GGA GTG CCA CCC GAC CAG GCG ACC GAC TTC GGC TCC GGT GTT CCA CCA GAA ACG
val val gly val pro pro asp gln ala thr asp phe gly ser ala val ala pro glu thr
161/61                               211/71
ACG GCG CCG GTC TGG ATC ACC ATG CTG TGG CCG CTG CCC GAC CCG CCC CCG TTS GCC CCC
thr ala pro val trp ile thr met leu trp pro leu ala asp arg pro arg leu ala pro
241/81                               271/91
GGG GCA CCC GGT GGC ACC GAT CCC GTC CCG CTG GTC GAC GAC GAC CTG GCA AAC TCG CTG
gly ala pro gly gly thr val pro val arg leu val asp asp asp leu ala asn ser leu
301/101                               331/111
GCC AAC GGC GGC CGG CTG GAC ATC CTC CTG TCG GCG CCC GAG TTC GGC ACC AAC CCG GAA
ala asn gly gly arg leu asp ile leu leu ser ala ala glu phe ala thr asn arg glu
361/121                               391/131
GTC GAC CCG GAC CGC GGC GTC GCG CGA GCG CTG TGC CTG GCC ATC GAC CCA GAT C
val asp pro asp gly ala val gly arg ala leu cys leu ala ile asp pro asp

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SEQ ID N° 36A

FIGURE 36A

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1/1                               31/11
ACC TGG GAC GAA GAC GAC GGC AGC AGC CCG AAT CAG ATC TAC CCG CTC CTG CTC AAC GTC
thr trp asp glu asp asp gly ser ser arg asn gln ile tyr pro val leu val asn val
61/21                               91/31
AAT GGA CAC CCG ACT ACG GTG CCG CTG CCG GCG TCG ACA ATG CCG GGT TCC TGT TGC CCG
asn gly his pro thr thr val arg leu arg gly ser thr met arg gly ser cys cys pro
121/41                               151/51
TGG TCG GAG TGC CAC CCG ACC AGG CCA CCG ACT TCG GCT CCG CTG TTG CAG CAG AAA CGA
trp ser glu cys his pro thr arg pro pro thr ser ala pro leu leu his gln lys arg
161/61                               211/71
CGG CCG CCG TCT GGA TCA CCA TGC TGT GCG CGT TGC CCG ACC GGC CCC GGT TGG CCG CCG
arg arg arg ser gly ser pro cys cys gly arg trp pro thr gly pro gly trp pro pro
241/81                               271/91
GGG CAC CCG GTG GCA CCG TTC CCG TCC GCG TGG TCG ACG ACG ACC TGG CAA ACT CCG TGG
gly his pro val ala pro phe pro ser gly trp ser thr thr trp gln thr arg trp
301/101                               331/111
CCA ACG GCG GCC GGC TGG ACA TCC TCC TGT CCG CCG CCG AGT TGG CCA CCA ACC GCG AAG
pro thr ala ala gly trp thr ser ser cys arg arg pro ser ser pro pro thr gly lys
361/121                               391/131
TCG ACC CCG ACG GCG CCG TCG GCC GAG CCG TGT GCG TGG CCA TCG ACC CAG ATC
ser thr pro thr ala pro ser ala glu arg cys ala trp pro ser thr ala ile

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SEQ ID N° 36B

110/185

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1/1          31/11
CCT GGG ACG AAG ACG ACG GCA GCA GCG GCA ATC AGA TCT ACC CGG TCC TGG TCA ACC TCA
pro gly thr lys thr thr ala ala ala ala ile arg ser thr arg ser trp ser thr ser
61/21      91/31
ATG GAC ACC CGA CTA CGG TGC GCG TGC GCG GCT CGA GAA TGC GCG GTT CCT GTT GCG CBT
met asp thr arg leu arg cys ala cys ala ala arg gln cys ala val pro val ala arg
121/41      151/51
GGT CGG AGT GCG ACC CGA CCA GGC CAC CGA CTT CGG CTC GCG TGT TGC ACC AGA AAG GAC
gly arg ser ala thr arg pro gly his arg leu arg leu arg cys cys thr arg asp asp
181/61      211/71
GGC GCG GGT CTG GAT CAC CAT GCT GTG GCG CCT GCG CGA CCG GCG CCG GTT GCG CCG CCG
gly ala gly leu asp his his ala val ala ala gly arg pro ala pro val gly pro arg
241/81      271/91
GGC ACG GGG TGG CAC CBT TCC GGT CCG GCT GGT CGA CGA CGA CBT GGC AAA CTC GCT GCG
gly thr arg trp his arg ser arg pro ala gly arg arg arg pro gly lys leu ala gly
301/101      331/111
CAA CGG CGG CCG GCT CGA CAT CBT CBT GTC GGC GCG CGA GTT CCG CAC CAA CCG GCA AGT
gln arg arg pro ala gly his pro pro val gly gly arg val arg his gln pro gly ser
361/121      391/131
CGA CCC CGA CCG CGT GBT CCG CCG AGC GCT CTG CBT GCG CAT CGA CCG AGA TC
arg pro arg arg arg arg arg pro ser ala val pro gly his arg pro arg

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SEQ ID N° 36 C

FIGURE 36C

Séquence codante Rv3809 prédite par Cole et al., 1993 (Nature 363 527-544) contenant Seq 36A

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1/1          31/11
GTG ACC GCA CTG CAA CTC GCG TGG GCG GCT TTG GCG CCG GTC ACC TCA GCG ATC GCG GTC
met thr ala leu gln leu gly trp ala ala leu ala arg val thr ser ala ile gly val
61/21      91/31
ATG GCG GCG CTC GGG ATG GCG CTC ACG GTA CCG TCG GCG GCA CCG CAC GCG CTC GCA GCG
val ala gly leu gly met ala leu thr val pro ser ala ala pro his ala leu ala gly
121/41      151/51
GAG CCG AGC CCG ACG CBT TTT GTC CAG GTC CCG ATC GAT CAG GTG ACC CCG GAC GTC GTG
glu pro ser pro thr pro phe val gln val arg ile asp gln val thr pro asp val val
181/61      211/71
ACC ACT TCC ACG GAA CCG CAT GTC ACC CTC ACC CGA ACG GTS ACC AAT ACC GGT GAC CCG
thr thr ser ser gln pro his val thr val ser gly thr val thr asn thr gly asp arg
241/81      271/91
CCA GTC CCG GAT GTS ATG GTC CCG CTT GAG CAT GTC GCG GCG GTC ACC TCG TCA ACC CCG
pro val arg arg val met val arg leu glu his ala ala val thr ser ser thr ala
301/101      331/111
TTA CCG ACC TCG CTG GAC GCG GCG ACC GAC CAG TAC CAG CCG GCG GCG GAC TTC CTC ACC
leu arg thr ser leu asp gly gly thr asp gln cys gln pro ala ala asp phe leu thr

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SEQ ID N° 36D

FIGURE 36D

FEUILLE DE REMPLACEMENT (REGLE 26)

111/185

361/121 391/131
 GTC GGC CCC GAA CTA GAC GCG GGG CAA GAG GGC GGG TTT ACC CTC TCG GCC CGG CTG CGG
 val ala pro glu leu asp arg gly gln gla ala gly phe thr leu ser ala pro leu arg
 421/141 451/151
 TCG CTC ACC AGG CCG TCG TTG GGC GTC AAC CAG CCC GGG ATC TAC CCG GTC CTG GTC AAC
 ser leu thr arg pro ser leu ala val asn gls pro gly ile tyr pro val leu val asn
 481/161 511/171
 GTC AAT GGG ACA CCC GAC TAC GGT GCG CCT GCG CGG CTC GAC AAT GCG CGG TTC CTG TTG
 val asn gly thr pro asp tyr gly ala pro ala arg leu asp asn ala arg phe leu leu
 541/182 571/191
 CCC GTG GTC GGA GTG CCA CCC GAC CAG GCG ACC GAG TTC GCG TCC GGT GTT GCA CCA GAA
 pro val val gly val pro pro asp gln ala thr asp phe gly ser ala val ala pro glu
 601/201 631/211
 ACG ACG GCG CCG GTC TGG ATC ACC ATG CTG TGG GCG CTG GCC GAC GGG CCC CGG TTG GGC
 thr thr ala pro val tsp ile thr met leu tgp pro leu ala asp arg pro arg leu ala
 661/221 691/231
 CCC GGG GCA CCC GGT GGC ACC GTT CCC GTC GGG CTG GTG GAC GAC GAC CTG GCA AAC TCG
 pro gly ala pro gly gly thr val pro val arg leu val asp asp asp leu ala asn ser
 721/241 751/251
 CTG GCG AAC GGG GCG CCG CTG GAC ATC CTC CTG TCG GCG GCG GAG TTC GCT ACC AAC CGG
 leu ala asn gly gly arg leu asp ile leu leu ser ala ala glu phe ala thr asn arg
 781/261 811/271
 GAA GTC GAC GCG GAC GCG GCG GTC GCG CGA GCG CTG TCG CTG GCG ATC GAC CCA GAT CTA
 glu val asp pro asp gly ala val gly arg ala leu cys leu ala ile asp pro asp leu
 841/281 871/291
 CTC ATC ACC GTC AAT GCG ATG ACC GCG GGC TAC GTC GTC TCC GAC TCG CCC GAC GCG GCG
 leu ile thr val asn ala met thr gly gly tyr val val ser asp ser pro asp gly ala
 901/301 931/311
 GCT CAA CTA CCG GGC ACC CCG ACC CAC CCG GCG ACC GCG CAG GCG GCG GCA TCC AGC TGG
 ala gln leu pro gly thr pro thr his pro gly thr gly gln ala ala ala ser ser tgp
 961/321 991/331
 CTG GAT CAA TTG CCG ACG CTA GTC CAC CCG ACA TGC GTG ACC CCG CTG GGT TTT GCG CAA
 leu asp arg leu arg thr leu val his arg thr cys val thr pro leu pro phe ala gln
 1021/341 1051/351
 GCG GAC CTG GAT GCT TTG CAG CCG GTT AAT GAT CCG AGG CTG AGC GCG ATC GCA ACC ATC
 ala asp leu asp ala leu gln arg val asn asp pro asp arg leu ser ala ile ala thr ile
 1081/361 1111/371
 AGC CCG GCG GAC ATC GTC GAC CCG ATC CTG GAT GTC AGC TCC ACC CCG GCG GCA ACC GTC
 ser pro ala asp ile val asp arg ile leu asp val ser ser thr arg gly ala thr val
 1141/381 1171/391
 CTG CCC GAC GCG CCG TTG ACC GCG CCG GCG ATC AAC TTG CTC AGC ACC CAC GCG AAC ACC
 leu pro asp gly pro leu thr gly arg ala ile asn leu leu ser thr his gly asn thr
 1201/401 1231/411
 GTT GCG GTC GCG GCG GCG GAT TTT ACC GCG GAG GAA CAG CAG GGT TCG TCC CAG ATC GCG
 val ala val ala ala ala asp phe ser pro glu glu gln gln gly ser ser gln ile gly
 1261/421 1291/431
 TCG GCG CTC TTA CCC GCT ACC GCG CCG CCG CCG TTG TCC CCG CCG GTC GTA CCG GCG CCG
 ser ala leu leu pro ala thr ala pro arg arg leu ser pro arg val val ala ala pro
 1321/441 1351/451
 TTT GAT CCC GCG GTT GCG CCG GCG CTC GCG GCG GCG GGA ACA AAC CCG ACC GTT GGT ACC
 phe asp pro ala val gly ala ala leu ala ala ala gly thr asn pro thr val pro thr
 1381/461 1411/471
 TAT CTA GAT CCC TCG TTG TTC GTT CCG ATC GCG CAT GAA TCG ATC ACC GCG CCG GCG CAG
 tyr leu asp pro ser leu phe val arg ile ala his gla ser ile thr ala arg arg gln

SEQ ID N° 36D (suite 1)

FEUILLE DE REMPLACEMENT (RÈGLE 26)

112/185

1441/481
 GAC GCC TTG GGC GCA ATG CTG TGG GGC ACC 1471/491
 asp ala leu gly ala met leu trp arg ser leu glu pro asn ala ala pro arg thr gln
 1501/501
 ATC CTG GTG CCG CCG GCG TCG TGG AGC CTG 1531/511
 ile leu val pro pro ala ser trp ser leu ala ser asp ala gln val ile leu thr
 1561/521
 GCG CTG GCG ACC GCG ATC CCG TCT GGC CTG 1591/531
 ala leu ala thr ala ile arg ser gly leu ala val pro arg pro leu pro ala val ile
 1621/541
 GGT GAC GCG GCG GCG CCG GAG CCA CCG 1651/551
 ala asp ala ala ala arg thr glu pro glu pro pro gly ala tyr ser ala ala arg
 1681/561
 GGC CCG TTC AAT GAC GAC ATC ACC AGC CAG 1711/571
 gly arg phe asn asp asp ile thr thr gln ile gly gly gln val ala arg leu trp lys
 1741/581
 CTG ACC TCG GCG TTG ACC ATC GAT GAG CCG 1771/591
 leu thr ser ala leu thr ile asp asp arg thr gly leu thr gly val gln tyr thr ala
 1801/601
 CCA CTA GCG GAG GAC ATG TGG CCG GCG CTG 1831/611
 pro leu arg glu asp met leu arg ala leu ser gln ser leu pro pro asp thr arg asn
 1861/621
 GGG CTG GCG CAG CAG CCG CTG GCG GTC GTT 1891/631
 gly leu ala gln gln arg leu ala val val gly lys thr ile asp asp leu phe gly ala
 1921/641
 GTG ACC ATC GTC AAC CCG GCG GCG TCC TAC 1951/651
 val thr ile val asn pro gly gly ser tyr thr leu ala thr glu his ser pro leu pro
 1981/661
 TTG GCG CTG CAT AAT GCG CFC GCG GTG CCA 2011/671
 leu ala leu his asn gly leu ala val pro ile arg val arg leu gln val asp ala pro
 2041/681
 CCC GGG ATG ACG GTG GCG GAT CTC GGT CAG 2071/691
 pro gly met thr val ala asp val gly gln ile glu leu pro pro gly tyr leu pro leu
 2101/701
 CGA CTA CCA ATC GAG GTG AAC TTC ACA CAG 2131/711
 arg val pro ile glu val asn phe thr gln arg val ala val asp val ser leu arg thr
 2161/721
 CCC GAC GGC GTC GCG CTG GGT GAA CCG GTG 2191/731
 pro asp gly val ala leu gly glu pro val arg leu ser val his ser asn ala cys gly
 2221/741
 AAG GTG TTG TTC CCG ATC ACG CTA TCC GCT 2251/751
 lys val leu phe ala ile thr leu ser ala ala ala val leu val thr leu ala gly arg
 2281/761
 CCG CTT TGG CAC CGG TTC CGT GCG CAG CCT 2311/771
 arg leu trp his arg phe arg gly gln pro asp arg ala asp leu asp arg pro asp leu
 2341/781
 CCT ACG GCG AAA CAG GCG CCG CAG CCG CGT 2371/791
 pro thr gly lys his ala pro gln arg arg ala val ala ser arg asp asp glu lys his
 2401/801
 CCG GTA TGA
 arg val ORA

SEQ ID N° 36D (suite 2)

FIGURE 36D (suite 2)

FEUILLE DE REMPLACEMENT (REGLE 26)

113/185

ORF d'après Cole et al., 1998 (Nature 393 537-544) et contenant Rv 3959.

1/1
TGA CTC AGC ACC GGG TCA GCA CAA CGG TCC GGG GCC GGG GCC ATG ACC GCA CTG CAA CTC
OPA leu ser thr gly ser ala gln arg ser arg ala gly ala val thr ala leu gln leu
61/21
GGC TGG GCC GCT TTG CGC CGC CTC ACC TCA CGC ATC GGC CTC GTG GCC GGC CTC GGG ATG
gly trp ala ala leu ala arg val thr ser ala ile gly val val ala gly leu gly met
121/41
GCG CTC AGC GTA CCG TCG GCG GCA CCG GAG GCG CTC GCA GCC GAG CCC AGC CCG AGC GCT
ala leu thr val pro ser ala ala pro his ala leu ala gly glu pro ser pro thr pro
181/61
TTT GTC CAG GTC CGC ATC GAT CAG GTG ACC CCG GAC GTG CTC ACC ACT TCC AGC GAA GCC
phe val gln val arg ile asp gln val thr pro asp val val thr thr ser ser glu pro
241/81
CAT GTC ACC GTC AGC GGA ACG GTG ACC AAT ACC GGT GAC CGC GCA GTC CGC GAT GTG ATG
his val thr val ser gly thr val thr asn thr gly asp arg pro val arg asp val ser
301/101
GTC CGG CTT GAG CAG GCC GCC CGG GTC ACC TCG TCA ACC GCG TTA CGC ACC TCG CTC GAC
val arg leu glu his ala ala ala val thr ser ser thr ala leu arg thr ser leu asp
361/121
GGC GGC ACC GAC CAG TAC CAG CCG GCC GCG GAC TTC CTC ACG GTC GCC CCG GAA CTA GAC
gly gly thr asp gln tyr gln pro ala ala asp phe leu thr val ala pro glu leu asp
421/141
CGC GGG CAA GAG GCC GGC TTT ACC CTC TCG GCC CCG CTC CAC TCG CTC ACC AGC CGC TCG
arg gly gln glu ala gly phe thr leu ser ala pro leu arg ser leu thr arg pro ser
481/161
TTG GCC GTC AAC CAG CCC GGG ATC TAC CCG GTC CTC GTC AAC GTC AAT GGG ACA CCC GAC
leu ala val asn gln pro gly ile tyr pro val leu val asn val asn gly thr pro asp
541/181
TAC GGT GCG CCT GCG CGC CTC GAC AAT GCG CGG TTC CTC TTG CCG GTG GTC GGA GTG CCA
tyr gly ala pro ala arg leu asp asn ala arg phe leu leu pro val val gly val pro
601/201
CCC GAC CAG GCC ACC GAC TTC GGC TCC GCT TTT GCA CCA GAA ACG ACC GCG CGC GTC TGG
pro asp gln ala thr asp phe gly ser ala val ala pro glu thr thr ala pro val tip
661/221
ATG ACC ATG CTG TGG CGC CTG GCC GAC CCG CCC CGG TTG GCG CCG GCG GCA CCC GGT GAG
ile thr met leu trp pro leu ala asp arg pro arg leu ala pro gly ala pro gly gly
721/241
ACC GTT CCG GTC CGG CTG GTC GAC GAC GAC CTC GAA AAC TCG CTC CCC AAC GCC GCG CCG
thr val pro val arg leu val asp asp asp leu ala asn ser leu ala asn gly gly arg
781/261
CTG GAC ATC CTC CTS TCG GCG GCG GAG TTC GCG ACC AAC CCG GAA GTC GAC GCG GAC GCG
leu asp ile leu leu ser ala ala glu phe ala thr asn arg glu val asp pro asp gly
841/281
GCC GTC GCG CAA GCG CTG TCG CTC GCG ATC GAC CCA GAT CTA CTC ATC ACC GTC AAT GCG
ala val gly arg ala leu cys leu ala ile asp pro asp leu leu ile thr val asn ala
901/301
ATG ACC GCG GGC TAC CTC CTC TCC GAC TCG CCG GAC GCG GCG GGT CAA CTA CCG GCG ACC
met thr gly gly tyr val val ser asp ser pro asp gly ala ala gln leu pro gly thr
961/321
CGC ACC CAC CCG GGC ACC GGC CAG GCC GCG GCA TCG ACC TCG CTC GAT CCA TTG CCG ACC
pro thr his pro gly thr gly gln ala ala ala ser ser asp leu asp arg leu arg thr

SEQ ID N° 36F

FEUILLE DE REMPLACEMENT (REGLE 26)

114/185

1021/341
 CTA GTC CAC CGG ACA TGC GTG ACG CGG CTG CCT TTT GGC CAA GGC GAC CTG GAT GCT TTG
 leu val his arg thr cys val thr pro leu pro phe ala gln ala asp leu asp ala leu
 1081/361
 CAG CGG GTT AAT GAT CGG AGG CTG AGC GCG ATC GCA ACC ATC AGC GCG GGC GAC ATC CTC
 gln arg val asn asp pro arg leu ser ala ile ala thr ile ser pro ala asp ile val
 1141/381
 GAC CGC ATC CTG GAT GTC AGC TCC ACC GCG GGC GCA ACC GTG CTG CCG GAC GGC CGG TTG
 asp arg ile leu asp val ser ser thr arg gly ala thr val leu pro asp gly pro leu
 1201/401
 ACC GCG GCG GCG ATC AAC TTG CTC AGC ACC CAC GGC AAC ACG GTT GCG GTC GCG GCG GCG
 thr gly arg ala ile asn leu leu ser thr his gly asn thr val ala val ala ala ala
 1261/421
 GAT TTT AGC GCG GAG GAA CAG CAG GGT TGG TCC CAG ATC GCG TCC GCG CTC TTA CCG GCT
 asp phe ser pro glu glu gln gln gly ser ser gln ile gly ser ala leu leu pro ala
 1321/441
 ACC GCG CCC CGG CGG TTG TCC CGG GCG GTG GTA GCG GCG CCG TTT GAT CCC GCG CTC GCG
 thr ala pro arg arg leu ser pro arg val val ala ala pro phe asp pro ala val gly
 1381/461
 GCG GCG CTG GCG GCG GCG GGA ACA AAC GCG ACC GTT CCT ACC TAT CTA GAT CCC TGG TTG
 ala ala leu ala ala ala gly thr asn pro thr val pro thr tyr leu asp pro ser leu
 1441/481
 TTC GTT CCG ATC GCG CAT GAA TCG ATC ACC GCG GCG CCG CAG GAC CCC TTG GCG GCA ATG
 phe val arg ile ala his glu ser ile thr ala arg arg gln asp ala leu gly ala met
 1501/501
 CTG TGG CGC AGC TTG GAG CGG AAT GCG GCG CCC GGT ACC CAA ATC CTG GTG CCG CGG GCG
 leu trp arg ser leu glu pro asn ala ala pro arg thr gln ile leu val pro pro ala
 1561/521
 TCG TGG AGC CTG GCG AGC GAC GAC GCG CAG CTC ATC CTG ACC GCG CTG GCG ACC GCG ATC
 ser trp ser leu ala ser asp asp ala gln val ile leu thr ala leu ala thr ala ile
 1621/541
 GCG TCT GCG CTG GCG CTG CCG CCA CCA CTA CCG GCG CTG ATC GGT GAC GCG GCG GCG GCG
 arg ser gly leu ala val pro arg pro leu pro ala val ile ala asp ala ala ala arg
 1681/561
 ACC GAG CCA CCG GAA CCG CCG GGC GCT TAC AGC GCG GGT CCG GCG GCG TTC AAT GAG GAC
 thr glu pro pro glu pro gly ala tyr ser ala ala asp gly arg phe asn asp asp
 1741/581
 ATC ACC CAG CAG ATC GCG GCG CAG GTT GCG CCG CTA TGG AAG CTG ACC TCG GCG TTG ACC
 ile thr thr gln ile gly gly gln val ala arg leu crp lys leu thr ser ala leu thr
 1801/601
 ATC GAT GAC CCG ACC GCG CTG ACC GCG GTG CAG TAC ACC GCA CCA CTA CCG GAG GAC ATC
 ile asp asp arg thr gly leu thr gly val gln tyr thr ala pro leu arg glu asp met
 1861/621
 TTG CCG GCG CTG AGC CAA TCG CTA CCA CCC GAT ACC CCG AAC GCG CTG GCG CAG CAG CCG
 leu arg ala leu ser gln ser leu pro pro asp thr arg asn gly leu ala gln gln arg
 1921/641
 CTG GCG GTC GTT GCA AAG AGC ATC GAC GAT GTT TTC GCG GCG GTC ACC ATC GTC AAC CCG
 leu ala val val gly lys thr ile asp asp leu phe gly ala val thr ile val asn pro
 1981/661
 GCG GCG TCC TAC ACT CTG GCG ACC GAG CAG AAT CCG CTG CCG TTT GCG CTG CAG AAT GCG
 gly gly ser tyr thr leu ala thr glu his ser pro leu pro leu ala leu his asn gly

SEQ ID 36F (suite 1)

FIGURE 36F (suite 1)

FEUILLE DE REMPLACEMENT (REGLE 26)

115/185

2041/691
 CTC GGC GTG CCA ATC CCG GTC CCG GTA CAG GTC GAT GCT CCG CCC GGG ATG ACG GTG GGC
 leu ala val pro ile arg val arg leu gln val asp ala pro pro gly met thr val ala
 2101/701
 GAT GTC GGT CAG ATC GAG CTA CCG CCC GGG TAC CPG CCG CTA CGA GTA CCA ATC GAG GTG
 asp val gly gln ile glu leu pro pro gly tyr leu pro leu arg val pro ile glu val
 2161/721
 AAC TTC ACA CAG CCG GTT GGC GTC GAC GTG TCG CTG CCG ACC CCC GAC GGC GTC GCG CTG
 asn phe thr gln arg val ala val asp val ser leu arg thr pro asp gly val ala leu
 2221/741
 GGT GAA CCG GTG CCG TTG TCG GTG CAC TCC AAC GCG TAC GGC AAG GTG TTG TTC GCG ATC
 gly glu pro val arg leu ser val his ser asn ala tyr gly lys val leu phe ala ile
 2281/761
 ACG CTA TCC GGT GCG GCC GTG CTG GTA ACG CTG GCG GCG CCG CCG CTT TGG CAC CCG TTC
 thr leu ser ala ala ala val leu val thr leu ala gly arg arg leu trp his arg phe
 2341/781
 CGT GGC CAG GCT GAT CCG GCC GAC CTG GAT CCG CCC GAC CTG GGT ACC GGC AAA CAC GCG
 arg gly gln pro asp arg ala asp leu asp arg pro asp leu pro thr gly lys his ala
 2401/801
 CCG CAG CGC CTT GCG GTA GCG ACT CCG GAT GAC GAA AAG CAC CCG GTA TCA
 pro gln arg arg ala val ala ser arg asp asp glu lys his arg val GPA

SEQ ID 36F (suite 2)

FIGURE 36F (suite 2)

1/1
 ATC CCG GCG TTG GCG TCG CAT CCG AAC ATC GTC GGA GTC AAG GAC GCC AAA GCG GAC GTC
 ile arg ala leu ala ser his pro asn ile val gly val lys asp ala lys ala asp leu
 61/21
 CAC AGC GGC GCC CAA ATC ATG GCC GAC ACC GGA CTG GCG TAC TAT TCC GCG GAC GAC GCG
 his ser gly ala gln ile met ala asp thr gly leu ala tyr tyr ser gly asp asp ala
 121/41
 CTC AAC CTG CCC TGG CTG GCG ATG GCG GCG ACG GCG TTC ATC AGC GTG ATT GGT CAC CTG
 leu asn leu pro trp leu ala met gly ala thr gly phe ala ser val ile ala his leu
 181/61
 GCA GCG GGG CAG CTT CCA GAG TTG TTG TCC GCG TTC GGT TCT GCG GAT ATC GCG ACC GCG
 ala ala gly gln leu arg glu leu leu ser ala phe gly ser gly asp ile ala thr ala
 241/81
 CCG AAG ATC
 arg lys ile

SEQ ID N° 37A

FIGURE 37A

116/185

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1/1                               31/11
GAT CCG CCG GTT GGC GTC GCA TCC GAA CAT CGT CCG AGT CAA GGA CCG CAA AGC CGA CCT
asp pro arg val gly val ala ser glu his arg arg ser gln gly arg glu ser arg pro
61/21                               91/31
GCA CAG CCG CCG CCA AAT CAT GGC GGA CAC CCG ACT GGC CTA CTA TTC CCG CGA CGA CCG
ala gln arg arg pro asn his gly arg his arg thr gly leu leu phe arg arg arg arg
121/41                               151/51
GCT CAA CCT GGC CTG GGT GGC CAT GGG CCG CAC GGG CTT CAT CAG CTT GAT TGC CCA CCT
ala gln pro ala leu ala gly his gly arg his gly leu his gln arg asp cys pro pro
181/61                               211/71
GGC AGC CCG GCA GCT TCG AGA GTT GTT GTC CCG CTT CCG TTC TGG GGA TAT CCG CAC CCG
gly ser arg ala ala ser arg val val val arg leu arg phe trp gly tyr arg his arg
241/81
CGC CAA GAT C
pro gln asp

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SEQ ID N° 37B

FIGURE 37B

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1/1                               31/11
TCC GCG CGT TGG CGT CCG ATC CGA ACA TCG TCG GAG TCA AGC ACG GCA AAG CCG ACC TCC
ser ala arg trp arg arg ile arg thr ser ser glu ser arg thr pro lys pro thr cys
61/21                               91/31
ACA GCG GCG CCC AAA TCA TGG CCG ACG CCG GAC TGG CCG ACT ATT CCG GCG AGC ACG CCG
thr ala ala pro lys ser trp pro thr pro asp trp pro thr ile pro ala thr thr arg
121/41                               151/51
TCA ACC TGC CCT GGC TGG CCA TGG GCG CCA CCG GGT TCA TCA CCG TGA TTG CCG ACC TGG
ser thr cys pro gly trp pro trp ala pro arg ala ser ser ala cys leu pro thr trp
181/61                               211/71
CAG CCG GGC AGC TTC GAG AGT TGT TGT CCG CCT TCG GTT CTG GGG ATA TCG CCA CCG CCC
gln pro gly ser phe glu ser cys cys pro pro ser val leu gly ile ser pro pro pro
241/81
GCA AGA TC
ala arg

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SEQ ID N° 37C

FIGURE 37C

117/185

Séquence codante RV2753c prédite par Cole et al., 1998 (Nature 383 537-541)
contenant Seq 37A

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1/1
GTG ACC ACC GTC GGA TTC GAC CTC GGA GGG CGC CTA GGA ACC CTG CTG ACC GCG ATG GTG
val thr thr val gly phe asp val ala ala arg leu gly thr leu leu thr ala met val
61/21
ACA CCG TTT AGC GGC GAT GGC TCC CTG GAC ACC GCG ACC GCG GCG GCG CTG GCG AAC CAC
thr pro phe ser gly asp gly ser leu asp thr ala thr ala arg leu ala asn his
121/41
CTG GTC GAT CAG GGG TGC GAC GGT CTG GTG GTC TCG GCG ACC ACC GCG GAG TCG GCG ACC
leu val asp gln gly cys asp gly leu val val ser gly thr thr gly gln ser pro thr
181/61
ACC ACC GAC GGG GAG AAA ATC GAG CTG CTG GCG GCG CTC TTG GAA GCG CTG GCG GAC GCG
thr thr asp gly gln lys ile gln leu leu arg ala val leu gln ala val gly asp arg
241/81
GCC GGT GGT ATC GCG GGT CCG GGC ACC TAT GAC ACC GCG GAC ACC ATC GCG CTG GCG AAG
ala arg val ile ala gly ala gly thr tyr asp thr ala his ser ile arg leu ala iys
301/101
GCT TGT GCG GCG GAG GGT GCG CAC GCG CTG CTG GTG GTC ACC GCG TAC TAT TCC AAG CCG
ala cys ala ala gln gly ala his gly leu leu val val thr pro tyr tyr ser iys pro
361/121
GCG CAG CCG GCG CTG CAA GCG CAT TTC ACC GCG GTC GCG GAC GCG ACC GAG CTG GCG ATG
pro gln arg gly leu gln ala his phe thr ala val ala asp ala thr gln leu pro ser
421/141
CTG CTG TAT GAC ATC CCG GCG GCG TCG GCG GTC CCG ATC GCG CCG GAC ACC ATC GCG GCG
leu leu tyr asp ile pro gly arg ser ala val pro ile gln pro asp thr ile arg ala
481/161
TTG GCG TCG CAT CCG AAC ATC CTC GGA GTC AAG GAC GCG AAA GCG GAC CTG CAG AGC GCG
leu ala ser his pro asn ile val gly val lys asp ala lys ala asp leu his ser gly
541/181
GCC CAA ATC ATG GCG GAC ACC GGA CTG GCG TAC TAT TCC GCG GAC GAC GCG CTC AAC CTG
ala gln ile met ala asp thr gly leu ala tyr tyr ser gly asp asp ala leu asn leu
601/201
CCG TGG CTG GCG ATG GCG GCG ACC GCG TTC ATC ACC GCG ATT GCG CAG CTG GCA GCG GCG
pro trp leu ala met gly ala thr gly phe ile ser val ile ala his leu ala ala gly
661/221
CAG CTG CGA GAG TTG TTG TCC GCC TTC GGT TCT GCG GAT ATC GCG ACC GCG GCG AAG ATC
gln leu cag gln leu leu ser ala phe gly ser gly asp ile ala thr ala arg lys ile
721/241
AAC ATT CCG CTC GCG CCG CTG TCC AAC GCG ATG ACC GCG CTG GGT GCG GTC AGC TTG TCC
asn ile ala val ala pro leu cys asn ala met ser arg leu gly gly val thr leu ser
781/261
AAG GCG GCG TTG GCG CTG CAG GTC ATC GAC GTC GGT GAT GCG GCG CTG CCG CAG GTC GCG
lys ala gly leu arg leu gln gln gly ile asp val gly asp pro arg leu pro gln val ala
841/281
GCG ACA GCG GAG CAG ATC GAC GCG TTG GCG GCG GAT ATG GCG GCG GCG TCG GTC CTT TCG
ala thr pro gln gln ile asp ala leu ala ala asp met arg ala ala ser val leu arg

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901/301
TGA
GGA

SEQ ID N° 37D

FIGURE 37D

FEUILLE DE REMPLACEMENT (REGLE 26)

118/185

ORF d'après Cole et al., 1998 (Nature 393 537-544) contenant Pu2753c

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1/1                               31/11
TAA GGT GAG CGC CGT GGC CGA GAC CGC GCG GGT GCG GGT GCA ACT GAT GCG CAA GAC CGA
GCH gly glu arg arg gly arg asp arg ala ala ala arg ala thr asp arg gln asp arg
61/21                               91/31
CTT CTT GGC CCC ACC CGA CGT GCG CTG GAC CAG CGA GCG CGA GCG GCG ACC CGC GGT GGT
leu leu gly pro thr arg arg ala leu asp his arg arg arg arg thr arg ala gly
121/41                               151/51
CGA GTT CGC GCG GCG GCG CTG CTA TCA GAG CTG CTC CAA GGC CAA TCC CAA GAC GCG CAC
arg val arg arg pro gly leu leu ser glu leu val gln ala gln ser gln asp arg his
181/61                               211/71
CAA GCG GCG CTA COT CGC GCA CAT CAT CGA CGT GCG ACA TTT CTC GGT GCT AGA GCA TGC
gln arg arg leu pro pro ala his his arg arg arg thr phe leu gly ala arg ala cys
241/81                               271/91
CAG CGT GTC GTT CTA CAT CAC CCG GAT CTC CCG ATC GTG CAC CCA CGA GCT GAT CCG CGA
gln arg val val leu his his arg asp leu ala ile val his pro arg ala asp pro pro
301/101                               331/111
CGC GCA TTT CTC CTA CTC GCA GCT CTC CCA GCG CTA GGT ACC CGA GAA GGA CTC GCG GGT
pro ala phe leu leu leu ala ala leu pro ala leu arg thr arg glu gly leu ala gly
361/121                               391/131
CGT CGT GCG GCG GCG CAT GGA GGA GGA GCG CGA GGT GCG GCA CAT COT GAC CGA GCG GCG
arg arg ala ala arg his gly gly arg arg arg pro ala pro his pro asp arg gly arg
421/141                               451/151
CGA GCG GCG GCG GCG CAC CTA CAG CGA GCT GCT GCG CAA GCT GGA AGC CAA GTT CCG CGA
arg arg arg pro arg his leu gln arg ala ala gly gln ala gly ser gln val arg arg
481/161                               511/171
CCA ACC CAA GCG GAT COT GCG CCG CAA GGA GCG GCG GCG GCG GCG GCG GGT GGT GCG
pro thr gln arg asp pro ala pro gln ala gly pro pro ser arg pro arg gly ala ala
541/181                               571/191
CAA GCG CAC CGA AAC CGC CAT GGT GGT GAC CCG CAA CTA GCG GCG CTG GCG GCA CTT CAT
gln arg his arg asp pro his arg gly asp arg gln leu pro gly leu ala ala leu his
601/201                               631/211
CGC AAT GCG GCG CAG CGA CGA CGC CGA GGT GGA AAT CCG GCG ACT GCG CAT CGA ATG COT
arg asp ala gly gln arg ala arg arg gly asp pro ala thr gly his arg met pro
661/221                               691/231
GCG CGA GCT CCG CCG GGT GCG CCG CCG GGT GGT GCG CAA GTT CCA GGT GAC CAC COT GCG
ala pro ala arg arg arg gly pro arg gly val arg arg leu arg gly asp his pro gly
721/241                               751/251
CGA GCG CAC CGA GGT GCG GAC CAG CCG GTT GCG GAC CCA AGC CTG AGC CCG GGT CTC GGT
arg arg his arg gly gly asp gln pro val gly asp arg ser leu arg arg arg val ala
781/261                               811/271
GGA CAA ACA GCG GCG CTC GCG GCG GCG ATA AAG GCG CAG GTA ACC TTG GGA GCG GTG ACC
gly gln thr arg ala leu ala ala gly ile lys arg gln val thr leu gly ala val thr
841/281                               871/291
AGC GTC GGA TTC GAC GTC GCA GCG CCG CTA GGA ACC CTG CTG ACC GCG ATG GTC ACA GCG
thr val gly phe asp val ala ala arg leu gly thr leu leu thr ala met val thr pro
901/301                               931/311
TTT AGC GCG GAT GCG TCC CTG GAC ACC GGT ACC GCG GCG CTG GCG AAC CAC CTG GTC
phe ser gly asp gly ser leu asp thr ala thr ala ala arg leu ala asp his leu val
961/321                               991/331
GAT CAG GCG TGC GAC GGT CTG CTC GTC TCC GCG ACC ACC GCG GAG TCG CCG ACC ACC
asp gln gly cys asp gly leu val val ser gly thr thr gly glu ser pro thr thr thr

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SEQ ID N° 37F

FIGURE 37F
FEUILLE DE REMPLACEMENT (REGLE 26)

119/185

1021/341
 GAG GCG GAG AAA ATC GAG CTG CTG CCG GCG GTC TTG GAA GCG GTG GGG GAC CCG GCG CGT
 asp gly glu lys ile glu leu leu arg ala val leu glu ala val gly asp arg ala arg
 1081/361
 GTT ATC GCG GGT GCG GCG ACC TAT GAC ACC GCG CAC AGC ATC CCG CTG GCG AAG GGT TGT
 val ile ala gly ala gly thr tyr asp thr ala his ser ile arg leu ala lys ala cys
 1141/381
 CCG GCG GAG GGT GCG CAC GGG CTG CTG GTG GTC ACC CCC TAC TAT TCC AAG CCG CCG CAG
 ala ala glu gly ala his gly leu leu val val thr pro tyr tyr ser lys pro pro gln
 1201/401
 CCG GCG CTG CAA GCG CAT TTC ACC GCG GTC GCG GAC GCG ACC GAG CTG CCG ATG CTG CTC
 arg gly leu gln ala his phe thr ala val ala asp ala thr glu leu pro met leu leu
 1261/421
 TAT GAC ATC CCG GCG CCG TCG GCG GTG CCG ATC GAG CCC GAC ACG ATC CCG GCG TTG GCG
 tyr asp ile pro gly arg ser ala val pro ile glu pro asp thr ile arg ala leu ala
 1321/441
 TCG CAT CCG AAC ATC GTC GGA GTC AAG GAC GCC AAA GCG GAC CTG CAC AGC GCG GCG CAA
 ser his pro asn ile val gly val lys asp ala lys ala asp leu his ser gly ala gln
 1381/461
 ATC ATG GCG GAC ACC GGA CTG GCG TAC TAT TCC GCG GAC GAC GCG CTC AAC CTG CCG TCG
 ile met ala asp thr gly leu ala tyr tyr ser gly asp asp ala leu asn leu pro tyr
 1441/481
 CTG GCG ATG GCG GCG ACG GCG TTC ATC AGC GTG ATT GCG CAC CTG GCA GCG GCG CAG CTT
 leu ala met gly ala thr gly phe ile ser val ile ala his leu ala ala gly gln leu
 1501/501
 CGA GAG TTG TTG TCC GCC TTC GGT TCT GCG GAT ATC GCG ACC GCG GCG AAG ATC AAG ATT
 arg glu leu leu ser ala phe gly ser gly asp ile ala thr ala arg lys ile asn ile
 1561/521
 GCG GTG GCG CCG CTG TCC AAC GCG ATG AGC CCG CTG GGT GCG GTG ACC TTG TCC AAG GCG
 ala val ala pro leu cys asn ala met ser arg leu gly gly val thr leu ser lys ala
 1621/541
 GCG TTG CCG CTG CAG GCG ATC GAC GTC GGT GAT CCC CCG CTG CCC CAG GTG GCG GCG ACA
 gly leu arg leu gln gly ile asp val gly asp pro arg leu pro gln val ala ala thr
 1681/561
 CCG GAG CAG ATC GAC GCG TTG GCG GCG GAC ATG CCG GCG GCG TCG GTG CTT CCG TGA
 pro glu gln ala asp ala leu ala ala asp met arg ala ala ser val leu arg pro

SEQ ID N° 37F (suite 1)

FIGURE 37F (suite 1)

120/185

1/1 31/11
 GCG GTG AAC TGG TGG GCC CGG ATG GTT CAA GTA CCG GGT CGC AAA CTC GAG CAC AAC AGG
 ala val asn trp trp ala arg met val gln val arg arg arg lys leu glu his asn arg
 61/21 91/31
 AGA CGA CGG ATG GAA GGA GAT GCT GGC GCG GCG CAG CTC AAC CCT GCC GAT GCG AAT AAG
 arg arg arg met gln gly asp ala gly ala gly gln leu asn pro ala asp ala asn lys
 121/41 151/51
 TCG TCG TCT ACG GAG GTG AAG GCG GCG GAT TCG GCG GAA TCT GAC GCC GGA GCG GAC CAG
 ser ser ser thr glu val lys ala ala asp ser ala glu ser asp ala gly ala asp gln
 181/61 211/71
 ACT GGC CGC CAG GTG AAG GCG GCG GAT TCG GCG GAA TCT GAC GCC GGA GAG CTC GCG GAG
 thr gln pro gln val lys ala ala asp ser ala glu ser asp ala gly glu leu gly glu
 241/81 271/91
 GAC GCG TGC CCA GAA CAG GCC CTC GTC GAG GCG GCG GCG TCG TCG CGG TCG GCG GCG TGG
 asp ala cys pro glu gln ala leu val glu arg arg pro ser arg leu arg arg gly trp
 301/101 331/111
 CTT GTT GCG ATT GCG GCG AGG CTG TTC GCG TTG GCG GGT GCG GCT GTC GCA GCG GGT TAT
 leu val gly ile ala ala thr leu leu ala leu ala gly gly leu gly ala ala gly tyr
 361/121 391/131
 TTT GCG TTG GCG TCA CAC CAG GAA AGC CAA TCA ATC GCG GCG GAG GAC CTT GCG GCG ATT
 phe ala leu arg ser his gln glu ser gln ser ile ala arg glu asp leu ala ala ile
 421/141 451/151
 GAG GCC GCT AAG GAT TGC GTT GCG GCC ACG CAG GCA CCC GAT GCT GCG GCG ATG TCG GGT
 glu ala ala lys asp cys val ala ala thr gln ala pro asp ala gly ala met ser ala
 481/161
 AGC ATG CAG AAG ATC
 ser met gln lys ile

SEQ ID N° 38A

FIGURE 38A

1/1 31/11
 CAG CGG TGA ACT GGT GGG GCC GGA TGG TTG AAG TAC GCG GTC GCA AAG TGG AGC ACA AGA
 gln arg GGA thr gly gly pro gly trp phe lys tyr ala val ala asn ser ser thr trp
 61/21 91/31
 GGA GAC GAC GGA TGG AAG GAG ATG CTG GCG GCG GCG AGC TGA ACC CTG CCG ATG GGA ATA
 gly asp asp gly trp lys glu met leu ala pro ala ser GGA thr leu pro met arg ile
 121/41 151/51
 AGT CGT CGT CTA GGT AGG TGA AGG GCG GCG ATT CCG GCG AAT CTG ACC CCG GAG GCG AAT
 ser arg arg leu arg arg GGA arg arg arg ile arg arg asn leu thr pro glu pro thr
 181/61 211/71
 AGA CTG GCG GCG AGG TGA AGG CCG GCG ATT CCG GCG AAT CTG ACC CCG GAG AGC TCG GCG
 arg leu ala arg arg GGA arg arg arg ile arg arg asn leu thr pro glu ser ser ala
 241/81 271/91
 AGG AGC GGT GCG CAG AAC AGG GCG TCG TCG AGC GCG GCG GAT GCG GGT TCG GCG GAG GGT
 arg thr arg ala gln asn arg pro ser ser ser gly ala arg arg gly cys gly glu ala
 301/101 331/111
 GCG TTG TCG GCA TCG CCG GGA GCG TCG TCG GGT TCG CCG GCG GCG TCG GCG GAG GCG GGT
 gly leu leu ala leu arg arg arg cys ser arg trp pro val ala leu ala gln arg val
 361/121 391/131
 ATT TTG GGT TCG GCT CAC ACC AGG AAA GCG AAT CAA TCG GCG GCG ACG ACC TTG GCG GCA
 ile leu arg cys ala his thr arg lys ala asn gln ser arg ala arg thr leu arg pro
 421/141 451/151
 TTG AGC GCG GCG AAG ATT GCG TTG GCG GCA GCG AGC GCG GCG GCG GCG GCG GCG GCG
 leu arg pro leu arg ile ala leu arg pro arg arg his pro met leu gly arg cys arg
 481/161
 CTA GCA TCG AGG AGA TC
 leu ala cys arg arg

SEQ ID N° 38B

121/185

1/1 31/11
 AGC GGT GAA CTG GTG GGC CCG GAT GGT TCA AGT ACC CCG TCG GAA ACT CGA GCA CAA CAG
 ser gly glu leu val gly pro asp gly ser ser thr pro ser gln thr arg ala gln gln
 61/21 91/31
 GAG ACG ACG GAT GGA AGG AGA TGC TGG CCG CGG CCA GGT GAA CCC TGC CGA TGC GAA TAA
 glu thr thr asp gly arg arg cys trp arg arg pro ala glu pro cys arg cys glu och
 121/41 151/51
 GTC GTC GTC TAC GGA GGT GAA GGC GGC GGA TTC GGC GGA ATC TGA CCG CGG AGC CGA CCA
 val val val tyr gly gly glu gly gly gly phe gly gly ile OPA arg arg ser arg pro
 181/61 211/71
 GAC TGG CCC GCA GGT GAA GGC GGC GGA TTC GGC GGA ATC TGA CCG CCG AGA GGT CCG CGA
 asp trp pro ala gly glu gly gly gly phe gly gly ala OPA arg arg arg ala arg arg
 241/81 271/91
 GGA CCG GTG CCC AGA ACA GGC CTT CTT CGA GCG CCG GCG CTC CCG GTT CCG GCG AGG CTG
 gly arg val pro arg thr gly pro arg arg ala ala pro val ala val ala ala arg leu
 301/101 331/111
 GGT TGT TGG CAT TGC GGC GAC GGT GGT CCG GTT GCG CCG TGG CTT TGG CCG AGC GGG TTA
 ala cys asp his cys gly asp ala ala arg val gly arg trp pro trp arg ser gly leu
 361/121 391/131
 TTT TGC GTT GCG CTC ACA CCA GGA AAG CCA ATC AAT CCG GCG CGA GGA CTT TGC GGC CAT
 phe cys val ala leu thr pro gly lys pro ile asp arg ala arg gly pro cys gly his
 421/141 451/151
 TGA GGC CCG TAA GGA TTG CTT TGC GGC CAC GCA GGC ACC CGA TGC TGG GGC GAT CTC GGC
 OPA gly arg och gly leu arg cys gly his ala gly thr arg cys trp gly asp val gly
 481/161
 TAG CAT GCA GAA GAT C
 AMB his ala glu asp

SEQ ID N° 38C

FIGURE 38C

122/185

Séquence Rv0175 prédite par Cole et al., 1998 (Nature 393 537-544) et contenant seq38A

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1/1                               31/11
GTG AAG GCG GCG GAT TCG GCG GAA TGT GAC GCG GGA GCG GAC CAG ACT GCG CCG CAG GTG
val lys ala ala asp ser ala glu ser asp ala gly ala asp gln thr gly pro gln val
61/21                               91/31
AAG GCG GCG GAT TCG GCG GAA TGT GAC GCG GGA GAG CTC GCG GAG GAC GCG TCC GCA GAA
lys ala ala asp ser ala glu ser asp ala gly gln leu gly glu asp ala cys pro glu
121/41                               151/51
CAG GCC CTC CTC GAG CGG CGC CGC TCG CGG TTG CGG CGA GCG TCG CTT GTT GGC ATT GCG
gln ala leu val glu arg arg pro ser arg leu arg arg gly trp leu val gly ile ala
181/61                               211/71
GCG ACG CTG CTC GCG TTG GCG GGT GCG CTT GCG GCA GCG CGT TAT TTT GCG TTG CGC TGA
ala thr leu leu ala leu ala gly gly leu gly ala ala gly tyr phe ala leu arg ser
241/81                               271/91
CAC CAG GAA AGC CAA TCA ATC GCG CGC GAG GAC CTT GCG GCG ATT GAG GCG GCT AAG GAT
his gln glu ser gln ser ile ala arg glu asp leu ala ala ile glu ala ala lys asp
301/101                               331/121
TCG GTT GCG GCG ACG CAG GCA GCG GAT GCT GCG GCG ATG TCG GCT AGC ATG CAG AAG ATC
cys val ala ala thr gln ala pro asp ala gly ala met ser ala ser met gln lys ile
361/121                               391/131
ATC GAG TGT GCG ACC GGT GAT TTC GGT GCC CAG GCG TCG TTG TAC ACC AGC ATG CTC GTC
ile glu cys gly thr gly asp phe gly ala gln ala ser leu tyr thr ser met leu val
421/141                               451/151
GAG GCG TAT CAA GCG GCC AGC CTC CAC CTG CAA GTG ACC GAT ATG CGC GCG GCG CTC GAG
glu ala tyr gln ala ala ser val his val gln val thr asp met arg ala ala val gln
481/161                               511/171
CGC AAC AAC AAT GAC GCG TCG CTC GAT GTT CTG CTC GCG CTC CCG GTC AAG GTG TCC AAC
arg asn asn asn asp gly ser val asp val leu val ala leu arg val lys val ser asn
541/181                               571/191
ACC GAC TCG GAT GCG CAT AAA CTC GCG TAC GGT GGT GCG GTC CCG ATG GCA CTG GAT CAG
thr asp ser asp ala his glu val gly tyr arg leu arg val arg met ala leu asp glu
601/201                               631/211
GGC GCG TAT AAG ATC GCG AAA CTC GAC CAG GCG ACC AAG TGA
gly arg tyr lys ile ala lys leu asp gln val thr lys opa

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SEQ ID N° 38D

FIGURE 38D

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ORF d'après Cole et al., 1998 (Nature 393 537-544) Contenant RV0175

1/1 31/11
TGA ACT GGT GGG GCC GGA TGG TGT CAA GTA CGC CGT CGC AAA CTC GAG CAC AAC AGG AGA
ORA kkr gly gly ala gly tgp cys gln val acg arg acg lys leu glu his asn arg arg
61/21 51/31
CGA CGG ATG GAA GGA GAT GCT GGC GGC GGC CAG CTG AAC CTT GCG GAT GCG AAT AAG TGG
arg arg met glu gly asp ala gly ala gly gln leu asn pro ala asp ala asn lys ser
121/41 151/51
TCG TCT ACG GAG GTG AAG GCG GCG GAT TCG GCG GAA TCT GAC GCG GGA GCG GAC CAG ACT
ser ser thr glu val lys ala ala asp ser ala glu ser asp ala gly ala asp gln thr
181/61 211/71
GCG CGG CAG GTG AAG GCG GCG GAT TCG GCG GAA TCT GAC GCG GGA GAG CTC GCG GAG GAC
gly pro gln val lys ala ala asp ser ala glu ser asp ala gly glu leu gly glu asp
241/81 271/91
GCG TGC CCA GAA CAG GCC CTC GTC GAG CGG CGC CGG TCG CCG TTG CCG CGA GCG TGG CTT
ala cys pro glu gln ala leu val glu arg arg pro ser arg leu arg arg gly trp leu
301/101 331/111
GTT GCG ATT GCG GCG ACG CTG CTC GCG TCG GCG GGT GCG CTT GCG GCA GCG GGT TAT TTT
val gly ile ala ala thr leu leu ala leu ala gly gly leu gly ala ala gly tyr phe
361/121 391/131
GCG TTG CGC TCA CAC CAG GAA ACC CAA TCA ATC CGC CGC GAG GAC CTT GCG GCG ATT GAG
ala leu arg ser his gln glu ser gln ser ile ala arg glu asp leu ala ala ile glu
421/141 451/151
GCG GCT AAG GAT TGC GTT GCG GCG ACC CAG GCA CGC GAT GCT GCG GCG ATG TCG GCT AGC
ala ala lys asp cys val ala ala thr gln ala pro asp ala gly ala met ser ala ser
481/161 511/171
ATG CAG AAG ATC ATC GAG TGT GGC ACC GGT GAT TTC GGT GCG CAG GCG TCG TTG TAC ACC
met gln lys ile ile glu cys gly thr gly asp phe gly ala gln ala ser leu tyr thr
541/181 571/191
AGC ATG CTC CTC GAG GCG TAT CAA CGG GCG AGC CTC CAC GTG CAA GTG ACC GAT ATG CGC
ser ser leu val glu ala tyr gln ala ala ser val his val gln val thr asp met arg
601/201 631/211
GCG GCG CTC GAG CGC AAC AAC AAT GAC GCG TCG GTC GAT GTT CTG GTG GCG CTC CGG CTC
ala ala val glu arg asn asn asn asp gly ser val asp val leu val ala leu arg val
661/221 691/231
AAG GTG TCG AAC ACC GAC TCG GAT GCG CAT GAA CTC GCG TAC CGT GTT GCG GTC CGG ATG
lys val ser asn thr asp ser asp ala his glu val gly tyr arg leu arg val arg met
721/241 751/251
GCA CTC GAT GAG GCG CGC TAT AAG ATC GCG AAA CTC GAC CAG GTG ACG AAG TGA
ala leu asp glu gly arg tyr lys ile ala lys leu asp gln val thr lys GGA

SEQ ID N° 38F

FIGURE 38F

124/185

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1/1                               31/11
ACA CCT CCC CCC CCG CCG CCG CTG CCG CCG GTT CCC TTT CCC AAG GAA TGT CCG GCG CCG
thr pro pro pro pro pro pro leu pro pro val pro phe pro lys glu cys pro ala pro
61/21                               91/31
GGC GTG ATG CAA GGC TGC CTT GAG AGC ACC AGC GGC TTG ATC ATG GGC ATC GAC AGC AAG
gly val met gln gly cys leu glu ser thr ser gly leu ile met gly ile asp ser lys
121/41                               151/51
ACC GCA CTG GTC CCC GAG CCG ATC ACC GGT CCC GTC GAG GAG ATC
thr ala leu val ala glu arg ile thr gly ala val glu glu ile

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SEQ ID N° 39A

FIGURE 39A

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1/1                               31/11
CAG CTC CCC CCC CCG CCG CCG TGC CCG CCG TTC CTT TTC CCA AGG AAT CTC CCG CCG CCG
his leu pro pro pro arg arg arg cys arg arg phe pro phe pro arg asp val arg arg arg
61/21                               91/31
GGC TGA TGC AAG GCT GCC TTG AGA GCA CCA GCG GCT TGA TCA TGG GCA TCG ACA GCA AGA
ala opa cys lys ala ala leu arg ala pro ala ala opa ser trp ala ser thr ala arg
121/41                               151/51
CCG CAC TGG TCG CCG ACC GCA TCA CCG GTG CCG TCG ACC AGA TC
pro his trp ser pro ser ala ser pro val pro ser arg arg

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SEQ ID N° 39B

FIGURE 39B

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1/1                               31/11
GAC ACC TCC CCG CCC GCG GCG GGT GCG GCG GGT TGC CTT TCC CAA GGA ATG TCC GCG GCG
asp thr ser pro pro ala ala ala ala ala gly ser leu ser gln gly met ser gly ala
61/21                               91/31
GGG GGT GAT GCA AGG CTG GGT TGA GAG CAG CAG CCG GTT GAT CAT GGG CAT CCA GAG CAA
gly arg asp ala arg leu pro opa glu his gln arg leu asp his gly his arg gln gln
121/41                               151/51
GAG GCG ACT GGT CCC CGA GCG CAT CAC CCG TGC CGT CCA GGA GAT C
asp arg thr gly arg arg ala his his arg tyr arg arg gly asp

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SEQ ID N° 39C

FIGURE 39C

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Séquence codante 8v3006 prédite par Cole et al., 1988 (Nature 333 537-544) et contenant seq39A

1/1
ATG TGG ALA AGG CGG TTG GTT CGA TCC GGA CTC GGC GGG CCG GCA GTG CTG GTA
Met trp thr thr arg leu val arg ser gly leu ala ala leu cys ala ala val leu val
61/71
TCG AGC GGC TGC GCA CGG TTT AAC GAC GCT CAA TCT CAG CCG TTC ACC ACC GAA CCG GAG
ser ser gly cys ala arg phe asn asp ala gln ser gln pro phe thr thr glu pro glu
121/141
CTG CGG CCG CAA CCG AGC TCG ACA GCT CRC CCC CCG CGG CCG CTG CCG CCG GTT CCC TTT
leu arg pro gln pro ser ser thr pro pro pro pro pro leu pro pro val pro phe
181/161
CCC AAG GAA TGT CCG CGG CCG GGC GTG ATG CAA GGC TGC CTT GAG AGC ACC AGC GGC TTT
pro lys glu cys pro ala pro gly val met gln gly cys leu glu ser thr ser gly leu
241/181
ATC ATG GGC ATG GAC AGC AAG ACC GGA CTG GTC GCG GAG CGC ATC ACC GGT GCG GTC GAG
ile met gly ile asp ser lys thr ala leu val ala glu arg ile thr gly ala val glu
301/191
GAG ATC TCT ATC AGC GGC GAG CCG AAG GTA AAG AGC GTC ATC CCG CTG GAT CCG CCC GGT
glu ile ser ile ser ala glu pro lys val lys thr val ile pro val asp pro ala gly
361/121
GAC GGT GGC TTG ATG GAC ATT GTG CTG TCG CCC ACC TAC TCG CAA GAC CGG CTG ATG TAC
asp gly gly leu met asp ile val leu ser pro thr tyr ser leu met tyr
421/141
GCT TAC ATC AGC AGC CCC ACC GAC AAC CGG GTG GTG CGA CTG CCG GAC GGC GAC ATC CCC
ala tyr ile ser thr pro thr asp asn arg val val arg val ala asp gly asp ile pro
481/161
AAG GAC ATC CTG ACC GGC ATC GGC AAA GGT GCT GCG GGT AAC ACC GCG GCG CTG ATC TTC
lys asp ile leu thr gly ile pro lys gly ala ala gly asn thr gly ala leu ile phe
541/181
ACG AGT CCG ACC AGC CTG GTC GTG ATG ACC GCG GAT GCT CCG GAC CCG GCG TTG GCG GCG
thr ser pro thr thr leu val val met thr gly asp ala gly asp pro ala leu ala ala
601/201
GAT CCC CAA TCG TTG GCG GGT AAG GTC CTG GGT ATC GAA CAG CCC ACC ACC ATC GCG CAG
asp pro glu ser leu ala gly lys val leu arg ile glu gln pro thr thr ile gly gln
661/221
ACG CCG CCG ACG AGC GCG CTG TCT GCG ATC GCG TCG GCG GCG TCG TCG ATC GAT CCG
thr pro pro thr thr ala leu ser gly ile gly ser gly gly leu cys ile asp pro
721/241
GTC GAC GCG TCG CTA TAT GTC GCG AAC GCG ACC CCA ACG GCG GAC CCA TTT GAG CCG ATC
val asp gly ser leu tyr val ala asp arg thr pro thr ala asp arg leu gln arg ile
781/261
ACC AAG AAC TCG GAG GTC TCT ACC GTA TGG ACC TCG CCG GAC AAG CCC GAT GTC GCG GCG
thr lys asn ser glu val ser thr val trp thr trp pro asp lys pro gly val ala gly
841/281
TGT GCG GCG ATG GAC GCG ACC GTG CTG GTC AAC CTG ATT AAT ACC AAA CTG ACG GTG GCG
cys ala ala met asp gly thr val leu val asn leu ile asn thr lys leu thr val ala
901/301
GTC CCG GTC GCG CCG TCG ACC GGT GCG GTC ACC GCA GAA CCG GAC GTT GTC CCG AAA GAC
val arg leu ala pro ser thr gly ala val thr gly glu pro asp val val arg lys asp
961/321
ACT CAT GCG CAT GCG TTG GCA TTA CCG ATG TCG CCG GAC GCG AAC GTC TCG GCA CCG ACC
thr his ala his ala trp ala leu arg met ser pro asp gly asn val trp gly ala thr
1021/341
GTC AAC AAG ACC GCG GCG GAC CCG GAC AAG GTC GAC GAT GTC GTG TTC CCG CTG TTC CTG
val asn lys thr ala gly asp ala glu lys leu asp asp val val phe pro leu phe pro
1081/361
CAG GGT GCG GCG TTC CCG GCG AAC AAC GAC GAC AAG ATC TGA
gln gly gly gly phe pro arg asn asn asp asp lys thr ora

SEQ ID N° 39D

FIGURE 39D
FEUILLE DE REMPLACEMENT (REGLE 26)

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ORF d'après Cole et al., 1998 (Nature 393 537-544) et contenant RV3006

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1/31/11
TAA GGC CAT TTA GTG CCG AAT TGG GGA TTT GAG CGG CGC TTT CGC CAG ACA ATC CGC ACA
OCH gly his leu val pro asn trp gly phe glb arg arg phe arg gln thr ile arg thr
61/21
TTG ACC CTG ACC AGC CCA CCA AAA GGC CCC AAT TGG GGC GGC ATG CCG ACA GTG CGC ACC
leu thr leu thr ser pro pro lys gly pro asn trp ala ala met pro thr val arg thr
121/41
CCG GCA GGT GGC GGC GAT GCG GAG AAT GTC CGT AGC CTG TCG GTC ATG TGG ACA ACG CGG
pro ala gly gly gly asp ala his asn val arg ser leu ser val met trp thr thr arg
181/61
TTG GTT CGA TCC GGA CTC GCG GCG CTG TCG GCG GCA CTG CTG GTA TCG AGC GGC TGG GCA
leu val arg ser gly leu ala ala leu cys ala ala val leu val ser ser gly cys ala
241/81
CGS TTC AAC GAC GGT CAA TCT CAG CCG TTC ACC ACG GAA CCG GAG CTG CCG CCG CAA CCG
arg phe asn asp ala gln ser gln pro phe thr thr glb pro glb leu arg pro gln pro
301/101
AGC TCG ACA GGT CCC CGC CGG CCG CCG CTG CCG CCG GTT CCC TTT CCG AAG GAA TGT CCG
ser ser thr pro pro pro pro pro leu pro pro val pro phe pro lys glu cys pro
361/121
CGC CCG GGC GTG ATG CAA GGC TCC GTT GAG AGC ACC AGC GGC TTT ATC ATG GGC ATC GAC
ala pro gly val met gln gly cys leu glu ser thr ser gly leu ile met gly ile asp
421/141
AGC AAG ACC GCA CTG CTC GCC GAG GCG ATC ACC GGT GCG GTC GAG GAG ATC TGT ATC AGC
ser lys thr ala leu val ala glu arg ile thr gly ala val gln gln ile ser ile ser
481/161
GCC GAG CCG AAG GTA AAG ACG GTC ATC CCG CTG GAT GGT GCC GGT GAC GGT GGC TTG ATG
ala glu pro lys val lys thr val ile pro val asp pro ala gly asp gly gly leu met
541/181
GAC ATT GTG CTG TCG CCC ACC TAC TCG CAA GAC CCG CTG ATG TAC GCG TAC ATC AGC ACG
asp ile val leu ser pro thr tyr ser gln asp arg leu met tyr ala tyr ile ser thr
601/201
CCC ACC GAC AAC CGG GTG GTG CGA GTG GCG GAC GGT GAC ATC CCG AAG GAC ATC CTG ACG
pro thr asp asn arg val val arg val ala asp gly asp ile pro lys asp ile leu thr
661/221
GGC ATC CCC AAA GGT GGT GCG GGT AAC ACC GCG GCG CTG ATC TTC ACC AGT CCC ACC ACC
gly ile pro lys gly ala ala gly asn thr gly ala leu ile phe thr ser pro thr thr
721/241
CTG CTG GTG ATG ACC GCG GAT GGT GCG GAC CCG CCG TTG GCG GCG GAT CCC GAA TCG TTG
leu val val met thr gly asp ala gly asp pro ala leu ala ala asp pro gln ser leu
781/261
GCG GGT AAG GTC CTG GGT ATC GAA CAG CCG ACC ACG ATC GCG CAG ACG CCG GCG ACG ACG
ala gly lys val leu arg ala gln gln pro thr thr ile gly gln thr pro pro thr thr
841/281
GCG CTG TCT GCG ATC GCG TCG GCG GCG GCG TTG TCG ATC GAT CCG GTC GAC GCG TCG CCA
ala leu ser gly ile gly ser gly gly gly leu cys ile asp pro val asp gly ser leu
901/301
TAT GTC GCG GAC CCC ACG CCA ACG CCG CAC CGA TTG CAG CCG ATC ACC AAG AAC TCG GCG
tyr val ala asp arg thr pro thr ala asp arg leu gln arg ile thr lys asn ser glu

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SEQ ID N° 398

FIGURE 39F

FEUILLE DE REMPLACEMENT (REGLE 26)

127/185

961/321 991/331
 GTC TCT ACG GTA TGG ACC TGG CCG GAC AAG CCC GGC GTG GCC GGG TGT GCC GCG ATG GAC
 val ser thr val trp thr trp pro asp lys pro gly val ala gly cys ala ala met asp
 1021/341 1051/351
 GGC ACC GTG CTG GTC AAC CTG ATT AAT ACC AAA CTG ACG GTG GCG GTC GGG CTC GCG CCG
 gly thr val leu val asn leu ile asn thr lys leu thr val ala val arg leu ala pro
 1081/361 1111/371
 TCG ACC GGT GCG GTC ACC GGA GAA CCC GAC GTT GTC CCG AAA GAC ACT CAT GCG CAT GCG
 ser thr gly ala val thr gly glu pro asp val val arg lys asp thr his ala his ala
 1141/381 1171/391
 TGG GCA TTA GCG ATG TCG CCG GAC GGC AAC GTC TGG GGA GCC ACC GTC AAC AAG ACC GCG
 trp ala leu arg met ser pro asp gly asn val trp gly ala thr val asn lys thr ala
 1201/401 1231/411
 GGC GAC GCC GAG AAG CTC GAC GAT GTG GTG TTC CCG CTG TTC CCG CAG GGT GGC GGC TTC
 gly asp ala glu lys leu asp asp val val phe pro leu phe pro gin gly gly gly phe
 1261/421
 CCG CGC AAC AAC GAC GAC AAG ACC TGA
 pro arg asn asn asp asp lys thr opa

SEQ ID N° 39F (suite)

FIGURE 39F (suite)

1/1 31/11
 GAA GGC CTT GTT GAG CCG GCG GAC GAA AAC GAT CCT TGT GTG TAC ATT GGT GTG TAT GGC
 glu gly leu val glu pro ala his glu asn asp arg cys val tyr ile gly val tyr gly
 01/21 31/31
 TCG GTT GAA CGT GTA TGT GCC CCA CGA ATT GGC GGA CCG CCG CAG GGC GCG GGG CTC GAA
 ser val glu arg val cys ala arg arg ile gly gly ala arg gin gly ala gly leu glu
 121/41 151/51
 CGT CTC GGC GCT GAC TCA GCG CCG GAT CAG TGC CGA GTT GGA GAA CTC CCG AAC CGA TGC
 arg leu gly ala asp ser gly arg asp gin cys arg val gly glu leu arg ser arg cys
 181/61 211/71
 GTC GCT TGA GGG GTT GGA ACC CAG AAG CAC CCG GCG TCG CCA TGA TGA CGT GGT GCG TGC
 val ala opa gly val gly thr gin lys his arg arg ser ala opa opa arg ala gly cys
 241/81 271/91
 GAT CGA TCG CCG TCG CGA TGA GTT CGA AGC GTG AGA GCA TCG CCG ACT TCG CCG CCG GAG
 asp arg cys arg ser arg opa val arg ser val arg ala ser pro thr ser pro pro glu
 301/101 331/111
 CAG GTG GTC TTC GAC GCG AGT GCG ATG GTG GAT C
 gin val val val asp ala ser ala met val asp

SEQ ID N° 40A

FIGURE 40A

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1/1 31/11
 AAG GCC TTG TTG AGC CGG CGC ACG AAA ACG ATC GTT GTG TGT ACA TTG GTG TGT ATG GCT
 lys ala leu leu ser arg arg thr lys thr ile val val cys thr leu val cys met ala
 61/21 91/31
 CGG TTG AAC GTG TAT GTG CCC GAC GAA TTG CGG GAG CGC GGC AGG CGG CGG GGC TTG AAC
 arg leu asn val tyr val pro asp glu leu ala glu arg ala arg ala arg gly leu asn
 121/41 151/51
 GTC TCG GCG CTG ACT CAG GGC GCG ATC AGT GGC CAG TTS GAG AAC TCC GCA ACC GAT GCG
 val ser ala leu thr gin ala ala ile ser ala glu leu glu asn ser ala thr asp ala
 181/61 211/71
 TGG GTT GAG GCG TTG GAA CCC AGA AGC ACC GGC GCT CGG CAT GAT GAC GTG CTG GGT GCG
 trp leu glu gly leu glu pro arg ser thr gly ala arg his asp asp val leu gly ala
 241/81 271/91
 ATC GAT GGC GCT CGC GAT GAG TTC GAA GCG TGA GAG CAT CGC CCA CTT CCC CGC CGG AGC
 ile asp ala ala arg asp glu phe glu ala GAA glu his arg pro leu arg arg arg ser
 301/101 331/111
 AGG TGG TCG TCG ACG CGA GTG CCA TGG TGG ATC
 arg trp ser ser thr arg val pro trp trp ile

SEQ ID N° 40B

FIGURE 40B

1/1 31/11
 AGG COT TGT TGA GGC GGC GCA CGA AAA CGA TCG TTG TGT GTA CAT TGG TGT GTA TGG CTC
 arg pro cys GAA ala gly ala arg lys arg ser leu cys val his trp cys val trp leu
 61/21 91/31
 GGT TGA ACG TGT ATG TGC CGG ACG AAT TGG CGG AGC GCG CCA GGG CGC CGG GCT TGA ACG
 gly GAA thr cys met cys pro thr asn trp arg ser ala pro gly arg gly ala GAA thr
 121/41 151/51
 TCT CGG CGC TGA CTC AGG CGG CGA TCA GTG CGG AGT TGG AGA ACT CGG CAA CCG ATC CGT
 ser arg arg GAA leu arg pro arg ser val pro ser trp arg thr pro glu pro met arg
 181/61 211/71
 GGC TTG AGG GGT TGG AAC CCA GAA GCA CGG GCG CTC GGC ATG ATG ACG TGC TGC GTG CGA
 gly leu arg gly trp asn pro glu ala pro ala leu gly met met thr cys trp val arg
 241/81 271/91
 TCG ATG CGC CTC GCG ATG ACT TCG AAG CGT GAG AGC ATC GGC CAC TTC GCG GCG GGA GCA
 ser met pro leu ala met ser ser lys arg glu ser ile ala his phe ala ala gly ala
 301/101
 GGT GGT GGT CGA CGC GAG TGC CAT GGT GGA TC
 gly gly arg arg arg glu cys his gly gly

SEQ ID N° 40C

FIGURE 40C

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Séquence codante Rv0549c prédite par Cole et al., 1998 (Nature 393:537-544) et contenant seq40A

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1/1                               31/11
gtg aga gca tgg ccc act tgg cgg cag gag cag gtg gtc gtc gac ggg agt gcc atg gtg
val arg ala ser pro thr ser pro pro glu glu val val val asp ala ser ala met val
61/21                               91/31
gat cta ctg gct cgc act agc gat cgg tgc act ggg gtg cgc ggc cgg ctg gcc cgg acc
asp leu leu ala arg thr ser asp arg cys ser ala val arg ala arg leu ala arg thr
121/41                               151/51
cgg atg ccc ggg cgg ggc ccc ttc gat gca gag gtg vtg tgg ggc ctg ggg tgg atg cag
ala met his ala pro ala his phe asp ala glu val leu ser ala leu gly arg met glu
181/61                               211/71
cgc gcc ggc gcc ctc acc gtt gcc tac gtc gac gcc gca ctg gag gag ttg cga cag gtg
arg ala gly ala leu thr val ala tyr val asp ala ala leu glu glu leu arg glu val
241/81                               271/91
cgg gtg act cga ccc ggt ctc tgg tgg ctg ctt gcc gga ggg tgg tgg cgc cgc gcc acc
pro val thr arg his gly leu ser ser leu leu ala gly ala ttp ser arg arg asp thr
301/101                              331/111
ctc cgc ctg acc gat gcc ctc tac gtc gag ctg gcc gaa arg gcc ggt ctg gtt ttg tgg
leu arg leu thr asp ala leu tyr val glu leu ala glu thr ala gly leu val leu leu
361/121                              391/131
acc acc gac gaa aga ttg gaa cgc gcc tgg acc tgg gcc ccc gcc att gcc tga
thr thr asp glu arg leu ala arg ala ttp pro ser ala his ala ile gly OPA

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SEQ ID N° 40D

FIGURE 40D

ORF d'après Cole et al., 1998 (Nature 393:537-544) et contenant Rv0549c

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1/1                               31/11
tga gtt cga agc gtg aga gca tgg ccc act tgg cgg cag gag gtg gtc gcc gac gcc
OPA val arg ser val arg ala ser pro thr ser pro pro glu glu val val val asp ala
61/21                               91/31
agt gcc atg gtg gat cta ctg gct cgc act agc gat cgg tgc tct gcc gtg cgc gcc cgg
ser ala met val asp leu leu ala arg thr ser asp arg cys ser ala val arg ala arg
121/41                               151/51
ctg gct cgg acc gcc atg ccc gcc cgg ggc tac ttc gat gcc gag gtg ctg tgg cgc ctg
leu ala arg thr ala met his ala pro ala his phe asp ala glu val leu ser ala leu
181/61                               211/71
ggg cgc atg cag cgt gcc ggc gca ctc acc gtt gcc tat gtc gac gcc gcc ctg gag gag
gly arg met glu arg ala gly ala leu thr val ala tyr val asp ala ala leu glu glu
241/81                               271/91
ttg cga cgg gtc cgg gtg act cga ccc ggt ctt tgg tgg arg gcc gcc gcc ggg tgg tgg
leu arg glu val pro val thr arg his gly leu ser ser leu leu ala gly ala ttp ser
301/101                              331/111
cgc cgc gac acc ctc cgc atg acc gat gcc ctc tac gtc gag ctg gcc gaa acc gca ggt
arg arg asp thr leu arg leu thr asp ala leu tyr val glu leu ala glu thr ala gly
361/121                              391/131
cgg gtg ttg tgg acc acc gac gaa aga ttg gaa gcc gcc ggg gcc tgg gcc ccc gcc atc
leu val leu leu thr thr asp glu arg leu ala arg ala ttp pro ser ala his ala ile
421/141
gcc tga
gly OPA

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SEQ ID N° 40F

FEUILLE DE REMPLACEMENT (REGLÉ 26)

FIGURE 40F

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1/1                               31/11
CCT GGC CGG GAC GGC TAC GTG TAG CCG CGG GCT AGC ACA GGA TAG CCA TTG TTG TGC GGT
pro gly arg asp ala tyr val AMB pro ala ala ser thr gly AMB pro leu leu cys gly
61/21                               91/31
AGC GGC AAA ACC ATC AGC CCT TCG CCG ACA TGT CAG CAC CCG CCT TCG CCG GGA GAG CCG
ser ala lys thr ile ser pro ser arg thr cys gin his pro pro trp pro gly glu arg
121/61                               151/51
CGT CGT GAC CGT GCT CTC ACC ACG TCT GGT TAG GGT CCG GGC CCG GGC TGG CCG GGA GGA
arg arg asp arg ala val thr thr ser gly AMB ala arg gly ala gly trp arg gly gly
181/61                               211/71
GGT GTG TTG CCG AGG AGG TGT GTT GTA GTG CCG ACG CCG GAT CCG CCG TTG GAC GCC TCG
gly val leu arg arg arg cys val val val gly thr ala asp arg pro leu asp ala ser
241/81                               271/91
GCC TTG CCG GAC TGG GCA CAC GCC CTC CTC AGC GAT C
ala leu arg asp trp ala his ala val val ser asp

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SEQ ID N° 41A

FIGURE 41A

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1/1                               31/11
CTG GCC GGG ACG GCT ACC TGT AGC CCG CGG CTA GCA CAG GAT AGC CAT TGT TGT GCG GTA
leu ala gly thr pro thr cys ser pro arg leu ala gin asp ser his cys cys ala val
61/21                               91/31
GGC CCA AAA CGA TCA GCG CTT CCG GGA CAT CTC AGC ACC CCG CTT GCG CCG GAG AGC GCG
ala pro lys arg ser ala leu arg gly his val ser thr arg leu gly arg glu ser gly
121/41                               151/51
GTC GTG ACC GTG CTG TCA CCA GGT CTG GTT AGG CTC GCG CCG CCG GCT GGC GCG GAG GAG
val val thr val leu ser pro arg leu val arg leu gly ala arg ala gly ala glu glu
191/61                               211/71
GTC TGT TGC GGA GGA GGT GTS TTG TAG TGG GGA CCG CCG ATC GGC CGT TGG ACG COT CCG
val cys cys gly gly gly val leu AMB trp gly arg arg ile gly arg trp thr pro arg
241/81                               271/91
CCT TGC GCG ACT GGG CAC ACG CCG TCG TCA GCG ATC
pro cys gly thr gly his thr pro ser ser ala ala

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SEQ ID N° 41B

FIGURE 41B

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1/1                               31/11
TGG CCG GGA CGC CTA CGT GTA GGC CGC GGC TAG GAC AGG ATA GCC ATT GTT GTC CGG TAG
trp pro gly arg leu arg val ala arg gly AMB his arg ile ala ile val val arg AMB
81/21                               31/31
CGC CAA AAC GAT CAG CCC TTC GCG GAC ATG TCA GCA CCC CCC TTG GCC CGC AGA GCG GCG
arg gln asn asp gln pro phe ala asp met ser ala pro ala leu ala gly arg ala ala
121/41                               151/51
TCG TGA CCG TCG TGT CAC GAC GTC TGG TTA GGC TCG GGG CGC CGG CTC GCG CGG AGG AGG
ser GVA pro cys cys his his val trp leu gly ser gly arg gly leu ala arg arg arg
181/61                               211/71
TGT GTT CCG GAG GAG GTG TGT TGT AGT GGG GAC GCG GGA TCG GCG GTT GGA CGC CTC GGC
cys val ala glu glu val cys cys ser gly asp gly gly ser ala val gly arg leu gly
241/81                               271/91
CTT GCG GGA CTG GGC ACA CGC CGT CGT CAG CGA TC
leu ala gly leu gly thr arg arg arg gln arg

```

SEQ ID N° 41C

FIGURE 41C

Sequence codante Rv2975c prédite par Cole et al., 1998 (Nature 393: 537-544) et contenant seq41A

```

1/1                               31/11
GTG GGG ACG GCG GAT CGG CCG TTG GAC GGC TGG GGC TTG CGG GAC TGG GCA AAC GCG GTC
val gly thr ala asp arg pro leu asp ala ser ala leu arg asp trp ala his ala val
61/21                               91/31
GTC AGC GAT CTG ATC CTC CAC CTC GAC GAG ATC AAC CGG CTC AAT GAG TTC CCG GTC GGT
val ser asp leu ile leu his ile asp glu ile asn arg leu asn val phe pro val ala
121/41                               151/51
GAC TCC GAC ACC GGC GTC AAC ATG CTG TTC ACC ATG CGT GCG GCG GTC GTA GAA GGT GAT
asp ser asp thr gly val asn met leu phe thr met arg ala ala val val glu ala asp
181/61                               211/71
TTG CCG GCG AAT TCG TAG GCT GAC GCG GAA GAC GAG GCG GCG GGT CCG GCG GGT CTC GCG
leu his ala asn ser glu ala asp ala glu asp val ala arg val ala ala ala leu ala
241/81
GAC GCG GAG GTC TGA
ala gly ala arg GGA

```

SEQ ID N° 41D

FIGURE 41D

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ORF d'après Cole et al., 1998 (Nature 393: 537-544) et contenant Rv2975c

```

1/1                               31/11
tag gct cgg ggc ggc ggc tgg cgc gga gga ggt gtg tgg cgg agg agg tgt gtt gta gta
AMB ala arg gly ala gly ttp arg gly gly val leu arg arg arg cys val val val
61/21                               91/31
ggg acg gcg gat cgg cgg ttg gat gcc tgg gcc ttg cgg gat tgg gca cac gcc gtc gtc
gly thr ala asp arg pro leu asp ala ser ala leu arg asp tip ala his ala val val
121/41                               151/51
agg gat atg atc atc cac atc gat gag atc aac cgg atc aat gtg ttc cgg gac gct gcc
ser asp leu ile leu his ile asp glu ile asp arg leu asn val phe pro val ala asp
181/61                               211/71
ccc gat acc ggc gtc aac atg atg ttc aac atg cgt gcc ggc gtc gta gaa gct gat tng
ser asp thr gly val asn met leu phe thr met arg ala ala val val glu ala asp leu
241/81                               271/91
cac ggc aat tgg cag gct gat gcc gaa gat ggg ggc cgg gtt ggc gcc gct ctc ggc gcc
his ala asn ser glu ala asp ala glu asp val ala arg val ala ala ala leu ala ala
301/101
ggc ggc cgt tga
gly ala arg OFA

```

SEQ ID N° 41F

FIGURE 41F

séquence Rv 2974C prédite par Cole et al., (Nature 393:537-544) et pouvant être dans la même phase de lecture que Seq41D. Le séquençage de cette région fait apparaître dans un cas sur trois une délétion de deux nucléotides mettant en phase bservé dans

```

1/1                               31/11
ttg aac gga gct cgc gcc aac tcc gcc gtg atc atg tcc cag atc atg cgc ggg atc gca
leu asn gly ala arg gly asn ser gly val ile leu ser glu ile leu arg gly ile ala
61/21                               91/31
gag gtg acc ggc act ggc gcc gcc gcc ttc ggc ggc gta atg cgg ggc gtc gat gcc aac
glu val thr ala thr ala ala ala ala ser gly ala val leu arg ala val asp ala asn
121/41                               151/51
gcc ctc ggg gcc ggc ttg tgg cgc gcc gtc gag ttg gtc gcc gcc tgg atg ggt gcc gtg
ala leu gly ala ala leu tip arg gly val glu leu val val ala ser met gly gly val
181/61                               211/71
gag gtg cgc gga aac atc gtc tgg gtg atg cgg gcc gct gcc gga gcc gcc gat aag tgc
glu val pro gly thr ile val ser val leu arg ala ala ala gly ala val asp glu cys
241/81                               271/91
ggg cac gag ggg ttg gcc gct ggc gcc aac gcc gcc gct gat gcc cgg gcc atc gcc atg
ala his glu gly leu ala gly ala val thr ala ala gly asp ala ala val ile ala leu
301/101                               331/111
gaa aac acc ccc gaa aag atc gat ggc gcc gcc gcc gat gcc gcc gcc gtg gcc gct gtc gga
glu lys thr pro glu gin leu asp val leu ala asp ala gly ala val asp ala gly gly

```

SEQ ID N° 41S

FIGURE 41S

FEUILLE DE REMPLACEMENT (REGLE 26)

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361/121 391/131
 cgg ggc ctg ctg gtt ctg ctg gac ggc ttg cgc ccc acc atc tgc ggg cag gca cct gcc
 arg gly leu leu val leu leu asp ala leu arg ser thr ile cys gly gln ala pro ala
 421/141 431/151
 cgg ggc gtc tac gaa ccc tgc cgg cgc ggc acc gat acg gct acc caa cgc ccc
 arg ala val tyr glu pro ser pro arg ala leu pro thr asp thr ala thr gln arg pro
 481/161 511/171
 cgc cgc caa tgc gac gat atg tat ctg ttg cgc gta tgt gat gct gca ggc ggc gac cag
 ala pro gln phe gln val met tyr leu leu ala val cys asp ala ala ala asp gln
 541/181 571/191
 ttg cgg gat cga ctc aag gaa ttg ggt gag tgc gtc gcc atc gcc gct gct cgc ccc gac
 leu arg asp arg leu lys glu leu gly glu ser val ala ile ala ala ala pro asp
 601/201 631/211
 agc tac tcc gta cac gtc ccc acc gac gac gcc ggt gcc gcc gtc gaa gcc gga ttg ggc
 ser tyr ser val his val his thr asp asp ala gly ala ala val glu ala gly leu ala
 661/221 691/231
 gtg ggg cga gtt agc cgg atc gtc atc tgc ggc ccc gat tcc ggg acc agc gga ttg cgc
 val gly arg val ser arg ile val ile ser ala leu gly ser gly thr ser gly leu pro
 721/241 751/251
 gcc ggt ggc tgg aag cgg ggc cgc gcc gtc cgc ggc gtc gln gat gga gac ggc gcc gcc
 ala gly gly trp thr arg gly arg ala val leu ala val val asp gly asp gly ala ala
 781/261 811/271
 gag ctg ttc gcc ggg gag ggc gcc tgc gtc ctg cgc cgc ggt cca gac gcc gtc acc cgc
 glu leu phe ala gly glu gly ala cys val leu arg pro gly pro asp ala val thr pro
 841/281 871/291
 gcc gcc gat atc agt gcc cac cag ctg gtc cgc gcc gtc gtc gac acc gcc gcc gcc nac
 ala ala asp ile ser ala his gln leu val arg ala val val asp thr gly ala ala his
 901/301 931/311
 gtg atg gtc ctg ccc aat gcc tac gtc gcc gcc gaa gaa ctg gtc gcc ggg tgc acc cgc
 val met val leu pro asn gly tyr val ala ala glu glu leu val ala gly cys thr ala
 961/321 991/331
 ggc atc gcc tgc ggc gtc gac gtc gta ccc gtc cgc acc gga tgc atg gtc cag ggc ttg
 ala ile gly trp gly val asp val val pro val pro thr gly ser met val gln gly leu
 1021/341 1051/351
 gcc gcy ctg gcc gtc cat gac ggc gcc cgc cag ggc gtc gac gac gcc tac agt atg gcc
 ala ala leu ala val his asp ala ala arg gln ala val asp asp gly tyr ser met ala
 1081/361 1111/371
 cgt gcc gcc ggc gct tcc cgg cac gga tgc gtc cgc att gcc acc caa aag ggc cgc acc
 arg ala ala gly ala ser arg his gly ser val arg ile ala thr gln lys ala leu thr
 1141/381 1171/391
 tgg gcc ggt acc tgc aag cgg gcc gac ggt ctg ggc acc gcc gcc gac gag gtc ctg atc
 trp ala gly thr cys lys pro gly asp gly leu gly ile ala gly asp glu val leu ile
 1201/401 1231/411
 gtc gcc gac gat gtc gcc ggc ggc gcc atc ggt ctg gcc gac ctg ttg ttg gca tgc gga
 val ala asp asp val ala ala ala ala ile gly leu val asp asp leu leu ala ser gly
 1261/421 1291/431
 gcc gat ctg gtc aag gtc ala att gcc gcc gcc gta acc gaa gac gtc gac gtc cty
 gly asp leu val thr val leu ile gly ala gly val thr glu asp val ala val val leu
 1321/441 1351/451
 gaa cgc cat gtc cgc gac cac cat ccc gcc acc ggc atg gtc tgc tcc tac cgc acc ggc cac
 glu arg his val his asp his his pro gly thr glu leu val ser tyr acc thr gly his
 1381/461 1411/471
 cgc gcc gac ggc ctg ctg atc ggc gtc gag tgc
 arg gly asp ala leu leu ile gly val glu ANS

SEQ ID N° 41S (suite)

FIGURE 41S (suite)
 FEUILLE DE REMPLACEMENT (REGLE 26)

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Seq41T comprenant seq 41F et seq 41S

1/1 31/11
 tta ggc tgg ggg cgc ggg cgg ggg cgg agg agt ggt gtt ggg gaa gag gta gct tgc agt
 leu gly ser gly arg gly leu ala arg arg arg cys val ala glu glu val cys cys ser
 AMB ala arg gly ala gly trp arg gly gly gly val leu arg arg arg cys val val val
 arg leu gly ala arg ala gly ala glu glu val cys cys gly gly gly val leu AMB trp
 61/21 51/31
 ggg gac ggc gaa tgg ggc ggt gga ggc ctc ggc ctt ggc gaa cgg ggc aca cgc cgt cgt
 gly asp gly ser ala val gly arg leu gly leu ala gly leu gly thr arg arg arg
 gly thr ala asp arg pro leu asp ala ser ala leu arg asp trp ala his ala val val
 gly arg arg ala gly arg trp thr pro arg pro cys gly thr gly his thr pro ser ser
 121/41 151/51
 cag cga tct gac cat cca cat cga cga gct cga cgc gct cca tct gtt ccc ggt cgc tga
 gln arg ser asp pro pro his arg arg asp gln pro ala gln cys val pro gly arg CPA
 ser asp leu ile leu his ile asp glu ile asn arg leu asn val phe pro val ala asp thr
 ala ala CPA ser ser thr ser thr arg ser thr gly ser ser cys ser arg ser leu thr
 101/61 211/71
 ctc cga tac cgg cgt cca cat ggt gtt ccc cat ggc tgc cgc ggt cgc aga agc tga ttt
 leu arg tyr arg arg glu his ala val his his ala cys arg gly arg arg ser CPA phe
 ser asp thr gly val asn met leu phe thr met arg ala ala val val glu ala asp leu
 pro ile pro ala ser thr cys cys ser pro cys val pro arg ser AMB lys leu ile cys
 241/81 271/91
 gca cgc gaa ttc gaa ggc tga cgc cga aga ggc ggc ggt ggc ggc ggc ggc ggc ggc
 ala arg glu phe ala gly CPA arg arg arg arg gly ala gly cys gly arg ser cys ggc
 his ala asn ser gln ala asp ala glu asp val ala arg val ala ala ala leu ala ala
 thr arg ile arg arg leu thr pro lys thr trp arg gly leu arg pro leu ser arg pro
 301/101 331/111
 cgg cgc ggc tgg aac gga gct cgc ggc aac tcc ggc gta arg cgc tac tag ata cty cgc
 arg arg ala leu asn gly ala arg gly asn ser gly val ile leu ser gln ile leu arg
 gly ala arg CPA thr glu leu ala ala thr pro ala CPA ser cys pro arg ser cys ala
 ala arg val glu arg ser ser arg gln leu arg arg asp pro val pro asp pro ala arg
 361/121 391/131
 ggg ctc gca gag ggc aac ggc act ggc gcc gcc gcc ttt ggc ggc gaa tta cgg ggc ggc
 gly ile ala glu val thr ala thr ala ala ala ala ser gly ala val leu arg ala val
 gly ser gln arg CPA pro arg leu arg pro phe pro leu ala arg tyr cys gly arg ser
 asp arg arg gly asp arg asp cys gly arg arg leu trp arg gly ile ala gly gly arg
 421/141 451/151
 gac gcc aac gcc ctc ggg gcc ggc ttt ggc gcc gcc gcc ttc ggc pro ctc ggc tgc agc
 asp ala ser ala leu gly ala ala leu trp arg gly val glu leu val val ala ala val
 thr pro thr pro ser gly pro arg cys gly ala ala ser ser trp ser ser arg arg trp
 arg gln arg pro arg gly arg val val ala arg arg arg val gly arg ala asp gly
 481/161 511/171
 ggt ggc gtc gag gty cgc gga cat arg gcc tgc gtc atg cgc gtc gcc ggc ggc gcc gtc
 gly gly val glu val pro gly thr ile val ser val leu arg ala ala ala gly ala val
 val ala trp arg cys arg glu leu ser ser arg cys cys gly pro pro glu pro ser
 trp arg gly gly ala gly asn tyr arg leu gly ala ala gly arg arg arg ser arg
 541/181 571/191
 gac cag gcc gcc gcc ggg ttt ggc ggt ggc gtc aac gcc gcc ggt gcc gcc gcc gcc
 asp gln cys ala his glu gly leu ala gly ala val thr ala ala gly asp ala ala val
 thr ser ala arg thr arg gly trp pro val arg ser pro pro pro val thr arg ser
 pro val arg ala arg gly val gly arg cys gly ala arg arg CPA arg gly gly his
 601/201 631/211
 atc ggc ctc gaa aag aac ccc gaa cag ctt gcc gtc atg cgc gtc gcc gcc gcc gcc gcc
 ile ala leu glu lys thr pro glu gln leu asp val leu ala asp ala gly ala val asp
 ser arg trp lys arg pro pro asn ser leu thr cys ser pro met arg ala arg trp thr
 arg ala gly lys asp pro arg thr ala CPA arg ala arg arg cys gly arg gly his
 661/221 691/231
 gcc gcc gga cga gcc cty cta gtt ctp cty gcc gcc ttt gcc ttt aac ata tgc gcc cag
 ala gly gly arg gly leu leu val leu leu asp ala leu arg ser thr ile cys gly gln
 pro ala asp gly ala cys trp phe cys trp thr arg cys ala pro pro ser ala gly arg
 arg arg thr gly pro ala gly ser ala gly arg val ala leu his his leu arg ala gly

SEQ ID N° 41T

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721/241 751/251
 gaa ccc gcc cgg ggg gtc tac gaa ccc tgg cgg cgc ggg tgg cgg acc gac acc gct acc
 pro pro ala arg ala val tyr glu pro ser pro arg ala leu pro thr asp thr ala thr
 his leu pro gly arg ser thr asn pro arg arg ala arg cys arg pro thr arg leu pro
 thr cys pro gly gly leu arg thr leu ala ala arg val ala asp arg his gly tyr pro
 761/261 811/271
 caa cgg ccc gcc cgg caa ttc gag gty atc tat ctg ttg ggg gta tgt gat gct gca ggg
 gln arg pro ala pro gln phe glu val met tyr leu leu ala val cys asp ala ala ala
 asn ala pro arg asn ser arg opa cys ile cys trp arg tyr arg met met leu gln arg
 thr pro arg pro ala ile arg gly asp val ser val gly gly met opa cys cys ser gly
 841/281 871/291
 ggg gac cag tgg cgg gac cga ccc aag gaa ttg ggt gag tgg gtg gcc acc gcc gct gct
 ala asp gln leu arg asp arg leu lys glu leu gln ser val ala ile ala ala ala
 arg thr ser cys gly ile asp ser arg asn trp val ser arg trp pro ser pro leu leu
 gly pro val ala gly ser thr gln gly ile gly opa val gly gly his arg arg cys ser
 861/301 931/311
 cgg acc gac acc tac tcc gta cac gtc cac acc gac gac gct gcc gcc gty gaa gcc
 pro pro arg ser tyr ser val his val his thr asp asp ala gly ala val glu ala
 arg pro thr ala thr pro tyr thr ser thr pro thr pro val pro pro trp lys pro
 ala arg gln leu leu arg thr arg pro his arg arg arg cys arg arg gly ser arg
 961/321 991/331
 gga tgg cgg ggt ggg cga gtt agc cgg atc ggg atc tgg gcc ctc ggt tcc ggg acc agc
 gly leu ala val gly arg val ser arg ile val ile ser ala leu gly ser gly thr ser
 asp trp arg trp gly glu leu ala gly ser opa ser arg arg ser val pro gly pro ala
 ile gly gly gly ala ser amb pro asp arg leu gly ala arg phe arg arg gln arg
 1021/341 1051/351
 gga tgg cgg gcc ggt gcc tgg acc cgg gcc cgc gcc ctg gcc gtc gtc gac gcc gac
 gly leu pro ala gly gly trp thr arg gly arg ala val leu ala val val asp gly asp
 asp cys arg pro val ala gly arg gly ala ala pro cys trp arg ser ser thr ala thr
 ile ala gly arg trp leu asp ala gly pro arg ala gly gly arg arg arg arg arg
 1081/361 1111/371
 ggt gcc gcc ggg ctg ttc gcc ggg gag gcc gcc tgc tgg ctg cya cgg ggt acc gcc gcc
 gly ala ala glu leu phe ala gly glu gly ala cys val leu arg pro thr gly pro asp ala
 val pro pro ser cys ser pro gly arg ala pro ala cys cys asp arg val gln thr pro
 cys arg arg ala val arg arg gly gly arg leu arg ala ala thr gly ser arg arg arg
 1141/381 1171/391
 ggg aca cgg gcc gcc gat atc agt gcc cac cag ctg ctg cgg gcc gty gta gac acc gcc
 val thr pro ala ala asp ile ser ala his gln leu val arg ala val val asp thr gly
 opa his arg pro pro ile ser val pro thr ser trp cys gly pro thr pro amb thr pro ala
 asp thr gly arg arg tyr gln cys pro pro gly ala gly arg gly arg his arg arg
 1201/401 1231/411
 gcc cgg cac gty atg gty ctg ccc aat gcc tat gtg gcc gcc gaa gaa ctg gty gcc ggg
 ala ala his val met val leu pro asn gly tyr val ala ala glu glu leu val ala gly
 pro arg thr opa trp cys cys pro met ala met trp pro pro lys asn trp trp pro gly
 arg ala arg asp gly ala ala gln trp leu cys gly arg arg arg thr gly gly arg val
 1261/421 1291/431
 tgt acc gcc ggg atc gcc tgg gcc gtc gcc gac gty gta ccc gty cgg acc gga tgg atg gty
 cys thr ala ala ile gly trp gly val asp val val pro val pro thr gly ser met val
 val pro arg arg ser ala gly ala ser thr tcc tyr pro cys arg pro arg arg trp cys
 tyr arg gly asp arg leu gly arg arg arg gly thr arg ala asp arg ile asp gly ala
 1321/441 1351/451
 cag ggg tgg ccc gcc ctg gcc gac tat gac ggg gcc cgg cgg gcc gtc gac gac gcc tac
 gln gln leu ala ala leu ala val his asp ala ala arg gln ala val asp asp gly tyr
 arg gly trp pro arg trp pro cys met thr arg pro ala arg pro ser thr thr ala thr
 gly val gly arg ala gly arg ala opa arg gly pro pro gly arg arg arg arg arg leu gln
 1381/461 1411/471
 agc atg gcc cgt gcc gcc ggt ggt tcc cgg cac gga tgg gty cgc atc gcc acc caa acc
 ser met ala arg ala ala gly ala ser arg his gly ser val arg ile ala thr gln lys
 ala tcc pro val pro pro val leu pro gly thr asp arg cys ala leu pro pro lys arg
 his gly pro cys arg arg cys phe pro ala arg ile gly ala his cys his pro lys gly

SEQ ID N° 41T (suite 1)

FIGURE 41T (suite 1)

FEUILLE DE REMPLACEMENT (RÈGLE 26)

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1441/1481 1471/1491
 gag ctg acc tgg ggc ggc acc tgc aag cgg ggc gac ggt ctg ggt atc ggc ggc gac gag
 ala leu thr trp ala gly thr cys lys pro gly asp gly leu gly ile ala gly asp glu
 arg oPa pro gly pro val pro ala ser arg ala thr val trp val ser arg ala thr arg
 ala asp leu gly arg tyr leu glu ala gly arg ser gly tyr arg gly arg arg gly
 1591/1601 1631/1611
 ggc ctg atc ggc ggc gac gat gtc ggc ggc ggc ggc atc ggt ctg gtc gac ctg ttc ttc
 val leu ile val ala asp asp val ala ala ala ala ile gly leu val asp leu leu leu
 cys oPa ser ser pro thr met ser pro arg arg pro ser val trp ser thr cys cys trp
 ala asp arg arg arg arg cys arg arg gly gly his arg ser gly arg pro val val gly
 1661/1621 1691/1631
 ggc tgc gga ggc gat ctg gtc aag gtc gtc att ggc ggc ggc gta acc gaa gac gtc ggt
 ala ser gly gly asp leu val thr val leu ile gly ala gly val thr glu asp val ala
 his arg glu ala ile trp oPa arg cys oCh leu ala pro ala oCh pro lys thr trp leu
 ile gly arg arg ser gly asp gly ala asn trp arg arg arg arg arg gly cys
 1621/1641 1651/1661
 gtc gtc ctg gaa cgg cat gtc gac gac cat cna ggc acc gag ctg gtc tcc tac cgc
 val val leu glu arg his val his asp his his pro gly thr glu leu val ser tyr arg
 ser ser trp asn gly met cys thr thr thr ile glu ala pro ser trp ser pro thr ala
 arg pro gly thr ala cys ala arg pro pro ser arg his arg ala gly leu leu pro his
 1691/1661 1711/1671
 acc gga cad cgc ggc gac ggc ctg ctg acc ggc gtc gag gag
 thr gly his arg gly asp ala leu leu ile gly val glu ash
 pro asp thr ala ala thr arg cys oPa ser gly ser ser
 arg thr pro arg arg arg ala ala asp arg gly arg val

SEQ ID N° 41T (suite 2)

FIGURE 41T (suite 2)

1/3 31/12
 gcc ggt aac gcc ggc tcc cag tgc tat ccg tcc gcc gga cgg ccg gaa aca tca cgg ggc
 ala gly asn ala ala ser gln cys tyr pro ser ala gly pro pro glu thr ser ala ala
 61/21 91/31
 gcc gcc gcc gtc gcc cgc gcc cgg gct cga ccc gct cca cut gcc cat cag cca cca ggt
 gly ala pro val gly arg gly arg ala arg pro ala pro pro gly his gln arg pro gly
 121/41 161/51
 tat cga ggt gca acc gga cgg tct tgc gat sca ccc cca act tcc cgg cga tcc cgg cga
 tyr arg gly gly ser gly arg cys trp asp ala arg pro thr cys arg arg ser arg arg
 191/61 211/71
 tgc tca tgc gaa ccc gcc acc cac aca atc ccc gca gca cgg cag cac gcc gcc cca ccc
 cys ser ser glu pro ala thr his thr met pro ala ala pro his asp gly ala pro pro
 241/81 271/91
 gct ctt cca gtc acc tga tca tca cac tca ccc cca taa ggc tgc tgc gct gcc gct gag
 ala leu ala val thr oPa oPa oPa his ser pro pro oCh gly ser ser ala ala pro glu
 301/101 331/111
 caa tgc agt arg ttt aca caa acc gac ttg taa aaa cct gcc gag ctg gcc tct atc gcc
 gln cys ser lys phe thr gln thr exp leu oCh lys pro ala gln val gly ser met ala
 361/121 391/131
 aac aaa cgt gcc aat gcc ggc cag cct ctg ccc ttg tgc gat c
 asn lys arg gly asp ala gly gln pro leu pro leu ser asp

SEQ ID N° 42A

FIGURE 42A

FEUILLE DE REMPLACEMENT (REGLE 26)